

# Integrated Pest Management

A Guide for Affordable Housing



**STOP**  
**Pests**  
in housing

We hope you will use this guide to implement integrated pest management (IPM) at your property. While the materials are designed for public housing authority (PHA) management and owners/agents of affordable housing, anyone can use the principles outlined here to integrate IPM practices into a residential pest management strategy. The complete guide and additional resources are at [www.stoppests.org](http://www.stoppests.org).

This guide

- provides the basic knowledge of pests and pesticides needed to make informed pest control decisions with a pest management professional;
- describes the parts of IPM and how to implement them in housing; and
- can be used to orient staff to their role on the IPM team using the certificate of completion in the appendix.

The materials in this guide are adapted from the *Delivery of IPM Training to PHAs* project, run by the Northeastern IPM Center through an interagency agreement between the U.S. Department of Agriculture's National Institute of Food and Agriculture and the U.S. Department of Housing and Urban Development's Office of Healthy Homes and Lead Hazard Control.

The training curriculum on which this guide is based was reviewed and supported by the National Center for Healthy Housing (NCHH), National Pest Management Association (NPMA), Pennsylvania IPM Program, Centers for Disease Control and Prevention (CDC), U.S. Department of Housing and Urban Development (HUD), U.S. Department of Agriculture (USDA), and U.S. Environmental Protection Agency (EPA).

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July 2012  
800 Printed  
FedEx Office

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# Integrated Pest Management at Residential Properties: A Better Way

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## WHAT IS IPM?

Integrated pest management (IPM) is the coordinated use of information about pests, the environment, and evidence-based pest control methods to prevent and manage pest infestations. Pests need food, water, and a place to hide. Take these away and you begin to solve the pest problem in a sustainable way.

## How IPM differs from calendar-based extermination

IPM	Calendar-Based Extermination
Inspection with a flashlight and monitoring are used to identify priority areas (where infestation exists or pest risk is high) for the best use of resources and staff time	Calendar-based use of pesticides throughout the building with quick inspection
Solves the infestation and prevents future occurrences	Results last only as long as the pesticide remains active
Takes into account pest behavior and life cycles and uses solutions that prevent pest population growth	Success depends on each pest coming in contact with a pesticide
Protects sensitive individuals from exposure to chemicals	Limited notification and posting about pesticides; alternatives rarely offered to sensitive individuals

## Five basic steps of IPM

### 1. Inspect and monitor

Thoroughly inspect and monitor all areas of the building for insect activity. Monitoring, even if no pests are present, is essential to IPM. In each dwelling unit, pay particular attention to areas that might provide pests with food, water, or shelter. Look at monitoring devices to determine the extent of the problem and circumstances that might influence control efforts. No pests or prevention recommendations? No action is needed—just record that there were no pests, make sure the monitor is working, and you are done.

### 2. Identify pests

Identify any pest on a monitor or evidence found during inspection. Knowing which pests are present and how many there are helps focus treatments on what will work best, rather than using a “one size fits all” approach.

**3. Compare your observations to action thresholds**

The action threshold is the maximum pest population that can be tolerated at a particular time and place without harming people, property, and the environment. You and your Pest Management Professional (PMP) should decide on action thresholds for pests that are found on your property and define a high-, medium-, and low-level of infestation. When the action threshold is reached, proceed with IPM step 4—take control. Scale control efforts to the level of infestation.

**4. Take control**

Limiting access to food, water, and shelter is key. Good maintenance and housekeeping are the first line of defense in IPM. To eliminate an infestation and prevent another one, use two or more control measures that work together.

- Cultural: changing behaviors (i.e., take garbage out frequently; don't leave dishes in the sink overnight).
- Physical: physically removing or blocking pests.
- Mechanical: using traps or other mechanical devices.
- Chemical: using least-risk (in terms of toxicity and risk of exposure) EPA-registered products that will get the job done.
  - *Using only pesticides—even low-toxic choices—is **not** IPM.*
  - Make sure the pesticide you use will work. Pests may be resistant to or avoid certain products.

**5. Evaluate effectiveness**

Did your control efforts work? Documentation, monitoring, and follow-up inspection including interviews with residents will confirm your success. After the infestation is gone and contributing problems are fixed, the area can return to the regular inspection and monitoring schedule.

Documentation is essential in IPM. Use an IPM log to record observations, evidence of pests, and any actions taken, including repairs, maintenance, and chemicals used. State law often requires pesticide records. Find information about IPM logs, with an example, on pages 16–17 of this guide. In addition, a log could include notes on resident housekeeping and contact with management relative to lease compliance. Keeping and using a log that includes the complete service history on each unit or area helps identify trends and keeps everyone on the same page. Individual building logs should be customized to each site for maximum effectiveness.

## How to transition to IPM

Most properties find that choosing a pilot site is a good way to get started with an IPM program. Set up an IPM log. Place monitors in every area (including dwelling units). Check the monitors after a week. Then, focus efforts where pests are caught or observed. Continue to monitor in areas where no evidence was found. Staff, residents, and pest control professionals will need to make exclusion, monitoring, housekeeping, and communication a priority. Once systems are in place and working well, they can be rolled out to other sites.

## WHY USE IPM?

IPM uses the most economical methods and with the least possible hazard to people, property, and the environment (U.S. Environmental Protection Agency, 2000). IPM programs focus on preventive measures—getting at the root of the problem before an infestation occurs. IPM should be part of weatherization and healthy housing initiatives. Fixing ways that pests get into buildings keeps the pests out, weatherizes buildings, and keeps buildings dry. IPM does more than control pests. Educating residents about their role in the battle against bugs empowers them to improve their housekeeping. The U.S. Department of Housing and Urban Development (HUD) suggests housing agencies manage pests using IPM according to PIH Notice 2011-22, located in appendix A of this guide.

## Limit exposure to public health pests

Pests and pesticides can each create health risks for people. IPM helps reduce exposure to both. Cockroaches and rodents have been identified as allergens and asthma triggers. They are public health pests because of the risks they can cause for building staff and residents, especially children and the elderly. Exposure to pesticides can also be problematic, particularly for those with chemical sensitivities.

### Learn More

For more information on the health and safety issues associated with pesticides, visit [www.epa.gov/pesticides/health/reducing.htm](http://www.epa.gov/pesticides/health/reducing.htm)

## Reduce costs

Repairing your property can cut energy bills, reduce moisture, and minimize future pest infestations. Focusing on pests in a targeted way may increase costs and labor time at first, but when the underlying causes of pest problems are fixed, overall expenses will decrease. You will save time when infestations are limited to periodic introductions. You will also minimize the cost of pest damage and can prevent the secondary problems that occur when residents try to control pests on their own.

## Follow HUD recommendations

IPM is part of a nationwide healthy homes movement to reduce housing-based health hazards by focusing on them in a coordinated fashion, rather than by addressing a single hazard at a time. HUD has identified seven qualities for healthy homes, all of which are addressed by IPM:

1. Dry
2. Clean
3. Well ventilated
4. Safe
5. Contaminant-free
6. Well maintained
7. Pest-free

## HOW ARE PESTICIDES USED IN IPM?

Calendar-based pesticide application is not part of IPM in multifamily housing. Remember—take action only when inspection and monitoring show evidence of pest infestation or when an area is at high risk for pest infestation. Apply pesticides only as a preventative measure when the risk of the potential pest infestation outweighs the risk of having the pesticide present. Routine, preventative pesticide application is not IPM. Pesticides kill pests most of the time, but they do not solve the ongoing problem and may pose unnecessary risk.

While the judicious use of pesticides can be part of IPM, there are several important considerations:

- Risk from pesticide exposure may outweigh the benefit of killing pests.
- Pesticides might harm pets and wildlife.
- Certain people may be especially sensitive to some pesticides.
- Pests may become tolerant of or avoid misapplied pesticide products.

If action thresholds indicate that pesticide use is appropriate, it is important for your pest management professional (PMP) to follow these key steps:

1. Choose the right product for the targeted pest.
2. Read the label and follow instructions for use, storage, and disposal.
3. Notify residents as required by the label or state/local law.
4. Use application methods that limit exposure.
5. Follow up to make sure the treatment worked.

Generally, PMPs should not be using liquid residual sprays as the primary control method for cockroaches. If they still rely on them, it might be partly because they think the customers (you and the residents) expect to see spraying as part of their service. Educate yourself about the pesticide options for pests by reading the sections below and have a discussion about pesticide product choice with your PMP.



- Baits and “botanicals”: Pesticide technology is always changing. In recent years, baits and botanicals have become popular. These products are still pesticides and must be used judiciously and according to label directions.
  - Research has proven baits to be the most effective method for eliminating cockroaches. Effective bait is also available for ants, rodents, and other pests.
  - Baits come in many formulations, including granular, gel, and liquid.
  - “Botanical” products may be exempt from EPA testing. Check for efficacy data before using.
- Insecticidal dusts: These products are applied as a very light coating in protected areas to serve as a chemical barrier.
  - Most dusts have a long residual efficacy.
  - Diatomaceous earth (DE) and boric acid are least toxic active ingredients.
  - Mixing insecticidal dust with food does not enhance its efficacy—follow the label instructions.
- Sprays and foggers: In general, these pesticides repel or kill the pest on contact. Some items to note:
  - Repellents may chase pests into another unit.
  - Fogs and sprays may not reach the majority of pests, which hide deep in cracks and crevices.
  - Sprays and foggers do not always kill eggs. With German cockroaches, egg cases protected in the mother’s body may still hatch even after the mother has died.
  - Sprays may contaminate baits. If strong-smelling sprays (pesticides or cleaners) contaminate the bait, the target pest will not take the bait.
  - Spray and fog applications often result in pesticide exposure to people. Given the high effectiveness of properly applied baits, this exposure and the related health risks may be unnecessary.
  - Residents should be discouraged from using or storing their own pesticides.

### **Protect people, pets, and the environment**

When talking about pesticides, risk is measured by multiplying the risk of exposure times the toxicity of the product.

The elderly, pregnant women, and children may be particularly vulnerable to adverse health effects associated with exposure to pesticides. Use reduced risk practices, follow label instructions, and practice prevention-based approaches that reduce reliance on chemical control measures. Know who in your community may be sensitive to pesticides and work with these residents and the PMP to assure effective control without risking their health.

Give special attention to people with chemical sensitivities so that they receive pest management services that meet their needs. Under the Fair Housing Act, chemical

sensitivities can constitute a handicap. Both the dwelling unit and common areas that the resident may use should be considered.

## Reduce risk

The total risk of harm is determined by multiplying a person's exposure to a chemical by its toxicity.

### *Exposure*

The risk of exposure increases when you come in contact with a pesticide. Touching a pesticide that can be seen is not the only way to be exposed to pesticides. Pesticides can get into the air and remain on surfaces for a long time even when you can't see or smell them. Application methods determine the risk of exposure. Putting bait in tamper-resistant stations or applying pesticides into cracks, crevices, and sealed wall voids can reduce the risk of exposure.

One example of a type of pesticide product with a high risk of exposure is a total-release fogger. Over-the-counter foggers *should not be used* to manage pests as part of an IPM program. Foggers release a very fine mist of pesticides into the air from pressurized cans. The mist lands on all exposed surfaces. In addition to posing the risk of chemical exposure, foggers can also be hazardous when misused because the propellant that spreads the insecticide through the air is flammable and can create an explosion.

### *Toxicity*

Pesticide labels have "signal" words that indicate the level of toxicity. If you have any questions about the storage, use, or disposal of a pesticide or cleaning product, read the label. The label will tell you the product name and the active ingredients, but it can also help you compare different products.

### Signal words

*CAUTION* = slightly toxic

*WARNING* = moderately toxic

*DANGER* = severe skin or eye irritation

*DANGER* or *DANGER—POISON* means the pesticide product is highly toxic by at least one route of exposure. It may be corrosive, causing irreversible damage to the skin or eyes. It may be highly toxic if eaten, absorbed through the skin, or inhaled. If this is the case, then the word "**POISON**" must also be included in red letters.

With IPM, almost all infestations can be managed with pesticides that say "CAUTION" on the label. The signal word is a better indicator of toxicity than a manufacturer's claims. No pesticide is nontoxic or completely safe.



## Address illegal pesticide use

EPA takes great care to review pesticides to avoid impacts to people or the environment. Pesticide manufacturers write instructions for the label that ensure the product will work as intended. EPA mandates that people read the label and follow all instructions carefully. Labels list where and how the chemical can be legally applied. Labels are the law.

A pesticide is illegal when the EPA (or the state where it is used) has not registered it, or it is used against the label directions. The following unapproved or “off-label” uses are not only dangerous, they are illegal:

- Using higher (stronger) concentrations
- Using the pesticide in places not listed or against pests not listed
- Not using prescribed personal protective equipment
- Applying the pesticide in a way not listed in the instructions on the label
- Improperly disposing of the pesticide

<b>For More Information</b>	<b>In an Emergency</b>
National Pesticide Information Center 800-858-7378 <a href="http://www.npic.orst.edu">www.npic.orst.edu</a>	Poison Control Center National Hotline 800-222-1222 <a href="http://www.aapcc.org">www.aapcc.org</a>



# An IPM Plan for Your Property

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## IPM BASICS

Taking control of pest problems with IPM requires setting up a property-wide system that finds, identifies, documents, and responds to a pest before an infestation has time to grow and spread. To get started, you will need to know the answers to the following questions:

- Which pests live at the property or are a threat in the area?
- What changes to the building or landscaping could be made to prevent these pests?
- Where is each active infestation located?
- For each area of infestation: What has been done? Did it work? And if not, what else can be tried?

The property manager and head of maintenance should know the answers to these questions so that time and resources for the nonpesticide control methods can be approved and staff can be directed to do their part. That coordination will be part of an overall IPM plan for your property. Developing such a plan will guide the operating procedure for pest control. Your PMP can be a great resource to help you write an IPM plan using the guidelines in appendix E.

### Learn More

For IPM training opportunities, visit  
[www.stoppests.org/ipm-training/](http://www.stoppests.org/ipm-training/)

## THE IPM TEAM

The IPM team consists of an IPM coordinator, property manager, pest management professional, maintenance and custodial staff, landscapers, residents, and resident support staff (who may be from another organization). These are the people who will make IPM work at a property. Buy-in at the executive level is essential for long-term adoption.

Everyone on the IPM team needs to understand IPM basics and receive documented training on their role in IPM. Use the certificate in appendix G for employees who have completed this training. Materials for training residents, staff, and housing leaders are available at [www.stoppests.org/ipm-training/](http://www.stoppests.org/ipm-training/). At least once a year, everyone on the IPM team should come together, review the IPM program at the site and trends from the log, and set goals for improvement for the following year.

The IPM team approach is a switch from calendar-based pest control. Each member of the IPM team plays a role, working together to make buildings great for people and bad for

pests. With limited budgets, it's important for staff to do their jobs with a heightened awareness of how they impact pest control. If people do their part, IPM will manage pests in a sustainable and affordable way.

The results of a team approach:

- An inspection and monitoring system that helps find pests
- A reporting system that helps identify areas of improvement
- Units that are properly prepared for effective treatment
- Communication that empowers all
- Fewer pests and a healthier environment

### **IPM coordinator<sup>1</sup>**

An IPM coordinator is the leader of the team. This model is different from turning all pest control over to an “exterminator” and expecting all problems to be solved. The coordinator makes sure all members of the IPM team (property manager, maintenance, resident support) are working together. The IPM coordinator will be the primary contact for all matters related to pest control and will act as a liaison between the building occupants, staff, and the PMP. In some cases the property manager takes on the role of IPM coordinator.

The IPM coordinator has the following responsibilities:

- Maintain records of all pest sightings by staff, visitors, and residents in the IPM log.
- Serve as the primary contact for the PMP to
  - communicate any pest problems;
  - communicate the PMP's recommendations related to maintenance, housekeeping, and sanitation; and
  - ensure that pest management practices carried out by the PMP are consistent with the contract and any applicable policies.
- Maintain written records of all pesticide applications.
- Allocate time and resources to focus areas—where an infestation is active—until the problems are solved.
- Serve as a contact person to members of the community interested in pest management practices.
- Evaluate the IPM program using the IPM log and service records on a regular basis, and analyze it for successes and ways to make improvements.
- Write and update the site IPM Plan (with assistance from maintenance and the PMP).
- Keep up to date on the current pest management practices and guidelines.

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<sup>1</sup> Adapted from Purdue Entomology Extension, 2000–2001. “IPM School Technical Resource Center.” See [extension.entm.purdue.edu/schoolipm/1pmp/pmpcoor.htm](http://extension.entm.purdue.edu/schoolipm/1pmp/pmpcoor.htm)

The IPM coordinator must be given the administrative authority to carry out these tasks successfully. For example, if the pest manager recommends that a cluttered unit be cleaned up to prevent a pest infestation, the IPM coordinator should have the authority or the administrative support to work with the resident, issuing a violation notice as a last resort.

The IPM coordinator can prepare for IPM by

- reading this entire guide;
- reading the pest control contract (if any) in place;
- becoming familiar with training options at [www.stoppests.org/ipm-training/](http://www.stoppests.org/ipm-training/); and
- subscribing to the StopPests blog ([stoppests.typepad.com](http://stoppests.typepad.com)) for continuing education and training opportunities.

### **Property manager**

Because they manage buildings and issue contracts, the ultimate responsibility for the IPM program often rests with the property managers. The manager may also act as the IPM coordinator for the property, as described above. The manager makes sure there is a good contract for professional pest management in place; that the maintenance staff is fixing holes, cracks, and leaks; and that landscapers are trimming bushes and eliminating hiding places for rodents. The property manager is also in charge of the resident lease signing, lease enforcement, and resident support and education.

At a PHA, the property manager should be sure to follow HUD's policy on IPM by developing and enforcing policies and procedures that support PIH 2011-22 (see appendix A). The property manager writes a request for proposals (RFP) for pest control that specifies the use of IPM practices and then hires a qualified PMP. The sample RFP describes this process in more detail: [www.stoppests.org/file/Sample-RFP](http://www.stoppests.org/file/Sample-RFP).

In addition, the manager

- initiates policy and lease changes to require IPM participation;
- enforces the lease and housekeeping standards;
- supports a building-wide inspection and monitoring plan;
- protects and assists vulnerable and sensitive populations; if unable to assist directly, he or she contacts family members, resident support services, or social services agencies as appropriate;
- records activities in focus units on the Focus Unit Tracking Log; and
- encourages a reporting system. Specifically, the manager
  - notifies staff and residents of upcoming PMP visits;
  - facilitates use of the IPM log (see page 16); and
  - tracks complaints and program performance.

Property managers should make sure pest inspection with a flashlight occurs at least

- at each pest control service by the PMP;
- at unit-turnover by maintenance staff;

## Integrated Pest Management: A Guide for Affordable Housing

- within 90 days of resident move-in by the property manager or housing inspector;
- annually (or more) during the housekeeping inspection by the property manager or housing inspector; and
- during preparation for the Real Estate Assessment Center (REAC) inspection by whoever is checking the property.

The property manager can be prepared for IPM by

- reading this entire guide;
- reading the pest control contract (if any) in place;
- becoming familiar with training options at [www.stoppests.org/ipm-training/](http://www.stoppests.org/ipm-training/); and
- subscribing to the StopPests blog ([stoppests.typepad.com](http://stoppests.typepad.com)) for continuing education and training opportunities.

### **Pest Management Professional (PMP)**

A key partner in IPM, the PMP should notify the IPM coordinator of upcoming visits, inspect and monitor for pests, identify pests, recommend pest-proofing strategies, apply effective and appropriate pesticides necessary to gain control, and provide pesticide use notifications where appropriate/required. If property staff perform the function previously referred to as “extermination,” their role is that of the PMP. The PMP must be licensed if required by the state, even when applying pesticides in vacant units.

PMPs document everything, including observations of building conditions, the results of monitoring, and pesticides or treatments used. The PMP should communicate with both staff and residents and follow up quickly when needed. Documenting in the Focus Unit Tracking Log and keeping service records accessible in the IPM log leaves a paper trail of what needs to be done and who followed up and did it. PMP qualifications to consider:

- GreenShield, QualityPro, or EcoWise (in CA) certified
- Association membership: National and/or State Pest Management Association
- PMP certification: Associate Certified Entomologist (ACE) or Board Certified Entomologist (BCE)

PMPs can be prepared for IPM by

- reading this guide;
- reading the pest control contract in place;
- reading and updating the IPM Plan;
- learning site safety protocols for work at the property;
- becoming familiar with the site IPM log; and
- maintaining an appropriate pesticide applicator license.

In addition, PMPs should be prepared to assist the IPM Coordinator with training the team in the proper identification of the various pest species, their habits, and control methods.



## Maintenance and custodial staff

Maintenance and custodial staff members play a crucial role in IPM by maintaining a healthy building and working closely with the PMP to respond to maintenance problems documented in the IPM log. They also need to fix the sources of pest problems, such as leaks, cracks, and holes in structures and building components.

By making thorough repairs and renovations, maintenance staff can block pests from entering a building or unit and finding a place to hide. If trained in pest inspection and monitoring, maintenance staff can also alert the PMP to pest problems. They report observations, problems, and actions taken in the IPM log, follow up on PMP recommendations, accompany the PMP during his or her service, and might be asked to assist with unit preparation for some pest treatments.

Vacant units provide an excellent opportunity for staff to clean, repair leaks, and seal cracks and crevices. Unless it is a pesticide-free unit, if a pest problem has been identified in the unit or area adjacent to the unit, have a PMP apply insecticidal dusts behind cabinets before the cracks, crevices, and gaps are sealed.

If the property has separate custodians responsible for cleaning and upkeep of common areas such as hallways, stairways, trash management areas, and laundry facilities, they should be trained in inspection, monitoring, and proper cleaning (especially for trash chutes and dumpsters). They should submit work orders for needed repairs through the IPM log.

Maintenance/custodial staff can be prepared for IPM by

- reading this guide;
- becoming familiar with the site IPM log;
- reading through pertinent sections and frequently asked questions at [www.stoppests.org/what-is-ipm/using-ipm/](http://www.stoppests.org/what-is-ipm/using-ipm/); and
- looking at each page of “A Guidebook on IPM and Structural Repairs” (from [www.bphc.org/hpphi/OwnersManagers/Pages/home.aspx](http://www.bphc.org/hpphi/OwnersManagers/Pages/home.aspx)).

## Landscapers

The property landscape needs to be included in the IPM program because many pests come from outside. Those responsible for plant choice, placement, and maintenance should be familiar with IPM recommendations for the plants in the local area. IPM for grounds incorporates practices such as watering and fertilization, but the goal is the same: to keep pest populations at tolerable levels by using multiple, economical approaches that pose minimal risk to people, property, and the environment.

Lawn pesticides can make people with chemical sensitivities sick. Vulnerable populations such as infants and pregnant women are at greater risk for adverse health effects associated with exposure to pesticides. For this reason it makes sense to use reduced risk

practices, follow label instructions, and practice prevention-based approaches. In addition, landscapers should

- monitor for pests (especially rats);
- report any evidence of pests in the IPM log;
- minimize use of pesticides on grounds; and
- select appropriate foliage that
  - doesn't offer cover for rat travel and burrowing;
  - does not touch buildings; and
  - resists pests naturally, with few pesticides, waterings, or nutrients required.

Landscape crews can be prepared for IPM by

- reading this guide;
- becoming familiar with the site IPM log;
- visiting [www.growinggreenlawns.org](http://www.growinggreenlawns.org) for lawn care tips; and
- visiting the Cooperative Extension website for planting guidelines at [www.nifa.usda.gov/Extension/](http://www.nifa.usda.gov/Extension/).

### Residents

The residents' role in IPM is just as important as the PMP's and much of the IPM coordinator's time may be dedicated to getting residents to participate. Residents must be aware of the importance of housekeeping and letting the PMP in for pest monitoring and control. Residents should report evidence of pests, leaks, mold, or other maintenance concerns and participate in monitoring as directed by the PMP. Routine inspection will catch problems that residents don't report. It is critical that residents follow the lease regarding standards for housekeeping, sanitation, trash removal, and storage. An example of a residential lease that includes IPM housekeeping standards can be found in appendix F of this guide. Residents should

- prepare their units as instructed and let the PMP in to inspect, replace monitors, and treat (if necessary);
- notify the property manager of disabilities or when assistance is needed to participate in the IPM program;
- work with staff to find reasonable accommodations if sensitivities exist; and
- educate and support their neighbors in IPM.

Residents can be prepared for IPM by

- reading and acknowledging the housekeeping standards in the residential lease;
- becoming familiar with the site IPM log; and
- watching the Tenant's Role in IPM video at [www.stoppests.org/working-with-residents/residents-briefing-video/](http://www.stoppests.org/working-with-residents/residents-briefing-video/).

## Resident support staff

Resident support services can include housing staff, housing inspectors, local code enforcers, home health care professionals, translators, families, friends, faith-based organizations, and anyone working with residents in their homes. Support staff might also help find assistance for residents who are unable to prepare their unit for the PMP due to financial, physical, or mental limitations, including hoarding.

Resident support service staff should know the residents' role in IPM so they can make sure the homes in which they work are pest-free or prepared to receive effective pest control. They can also play a role in educating residents about pests, proper housekeeping, monitoring, and pest prevention.

Resident support staff can be prepared for IPM by

- reading and acknowledging the housekeeping standards in the residential lease;
- becoming familiar with the site IPM log;
- watching the Tenant's Role in IPM video at [www.stoppests.org/working-with-residents/residents-briefing-video/](http://www.stoppests.org/working-with-residents/residents-briefing-video/); and
- knowing the common obstacles and suggested solutions when working with residents (see [www.stoppests.org/working-with-residents/](http://www.stoppests.org/working-with-residents/)).

## DAY-TO-DAY IPM

The roles of everyone on the IPM team are important in the day-to-day implementation of IPM in housing. Success depends on the following five components:

1. Everyone (residents, staff, and contractors) inspects for pests and checks monitors.
2. Whoever finds a pest calls in a work order, which is coded to be pest-specific. The work order is entered into the Focus Unit Tracking Log in the IPM log. This recordkeeping system is crucial for tracking problems so that property-wide trends can be identified and addressed.
3. A PMP or property staff member with pest-control knowledge inspects the area, identifies and verifies the problem, and makes a plan for action. The plan may come from the site IPM Plan and includes who will do what.
4. At least two IPM control options are used (for example, cleaning the kitchen and setting mouse traps). Pesticides are never the only control tactic. Unit-specific records are put in an IPM log every time a staff member or a PMP works on the problem.
5. Team members continue to inspect, monitor, record observations, and follow up. If the initial efforts don't work, team members reevaluate the plan and try a different set of control options. Learning where control was not successful helps an IPM program develop into a system that works for the site.

## The IPM log

The IPM log keeps all team members informed of key aspects of a successful IPM program. Information from the IPM log should inform decision-making. The log ties all the components of the program together and should be readily accessible and used by all members of the IPM team. The PMP may supply the majority of the contents. An IPM log is usually a binder with the following sections:

- Site-specific IPM plan (see appendix E)
- Focus unit tracking log (see appendix D)
- Service schedule
- Service log (containing the PMP’s service forms)
- Applicator licenses
- Proof of insurance and business registration
- Contract/service agreement
- Potential notifications/preparation instructions
- A listing of the pesticide products that are used on the site and a link to, or printed copies of, the labels and Material Safety Data Sheets (MSDS) for each
- Educational materials for staff and residents

As long as everyone can see and contribute to the log and someone is following up on identified problems, it will be effective. Some properties use an electronic format, incorporating the work order system and/or service reports from the pest control company. Others report on paper to property managers, who integrate all inputs into a central document. More examples of IPM log materials can be found at [www.stoppests.org/file/IPM-Log-Example.2](http://www.stoppests.org/file/IPM-Log-Example.2)

FOCUS UNIT TRACKING LOG								
Name/Address of Property: _____								
<i>The IPM team identifies areas or units of focus and coordinates IPM efforts. This sheet unites pest control, housing, and maintenance record-keeping systems. Keep it in the front of the IPM log.</i>								
Date	Unit / Location	Name of Staff Member / Technician	Pest Level	Repairs Needed		Recent or Current Focus Unit?	Housekeeping / Lease Compliance	
			Note any pests and circle the level of infestation. Involve your PMP.	Work order number or problem description	Check when completed	Yes or No	Housekeeping level* (circle one)	Action taken (e.g., met with tenant, sent violation notice)
			Type of Pest: Light Moderate Heavy				G F P	
			Type of Pest: Light Moderate Heavy				G F P	
			Type of Pest: Light Moderate Heavy				G F P	
			Type of Pest: Light Moderate Heavy				G F P	

\* Housekeeping level:  
 G Good—little or no food or water accessible to pests, easy to move throughout the unit, and inspection in all areas is possible  
 F Fair—dishes left undone for more than one day, or plenty of food or water accessible to pests, or PMP has to step over or move items to inspect  
 P Poor—multiple days of dirty dishes, sloppy food storage methods, or PMP’s inspection and service is limited by clutter

A focus unit tracking log should be easy to find at the front of your IPM log binder. This log ties everyone’s work together while an infestation is being eliminated. See appendix D.

The more eyes that are trained to look for pests and pest-friendly conditions, the greater the chance the pests will be managed property-wide. Inspection will draw attention to problems that, if not addressed, will continue to grow until they cannot be overlooked. The Focus Unit Tracking Log helps ensure the recommendations get to the right people. For example, a PMP’s pest inspection will identify the following in early stages:

<sup>2</sup> A note on the PMP’s service forms: PMPs should inspect each home and provide recommendations for maintenance staff and residents on a unit-specific form. You pay for these expert recommendations, which are a valuable part of the service you receive.

- Water leaks (in roofs and pipes)
- Holes in walls (interior and exterior)
- Problems in wall voids
- Poor housekeeping (including suspected or diagnosed hoarding)
- Improper disposal of trash and garbage
- Pest infestation

Someone designated by the IPM coordinator must read the PMP's recommendations on the Focus Unit Tracking Log and service reports and assign tasks to complete them in a timely manner. Act promptly when a problem is noted to prevent pests, perform ongoing maintenance, and get help from residents before they take action on their own (such as using pesticide sprays that may negatively affect them and their neighbors).

## **AN RFP FOR PEST MANAGEMENT**

Developing a strong request for proposal (RFP) is the best way to hire the right PMP for the job. The cost for IPM service may be greater than for calendar-based service, but you will be paying a professional to actually achieve your pest management goals. Write clearly into the RFP that you are seeking IPM services. That way, applicants who are not proposing IPM programs but who may be low bidders can be rejected. For guidance, see our sample RFP at [www.stoppests.org/what-is-ipm/using-ipm/pesticide-applications/hiring-a-pest-management-firm/](http://www.stoppests.org/what-is-ipm/using-ipm/pesticide-applications/hiring-a-pest-management-firm/). These programs certify pest management firms on their professionalism and IPM service:

- GreenShield Certified: [www.greenshieldcertified.org](http://www.greenshieldcertified.org)
- Quality Pro's GreenPro Service: [www.npmagreenpro.org](http://www.npmagreenpro.org)
- EcoWise Certified (California only): [www.ecowisecertified.org](http://www.ecowisecertified.org)

At a minimum, an IPM program must involve the following:

1. Inspection with a flashlight and monitoring in every unit at least once a year.
2. Identification of pests before treating, to target control.
3. Establishment of action threshold levels. The time spent in a unit and any management methods should be relative to the level of infestation.
4. Employment of two or more control measures (which may be cultural, mechanical, physical, or chemical). Relying on pesticides as a first or sole course of action is not IPM.
5. Evaluation of effectiveness. The pest management professional should keep unit-specific records for every inspection and service and provide reports to the property manager so that the IPM program can be tracked, evaluated for effectiveness, and changed, if need be.



## Focus Pests in Housing

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Many pests are health hazards. In this guide, we focus on cockroaches, rodents, and bed bugs. These three pests are common, have health importance, and the IPM strategies we use to manage them will also work on many other pests. For more information on other pests and their control, see page 37 and [www.stoppests.org/pest-solutions/](http://www.stoppests.org/pest-solutions/).

### COCKROACHES

Cockroaches live in areas where humans provide food, water, and shelter. They are most active at night. The four types of cockroaches that are most often found in housing are: German, Brown-banded, American, and Oriental. All cockroach nymphs (babies) look like smaller versions of the adults. Egg cases may hold 35–40 eggs.

#### Why focus on cockroaches?

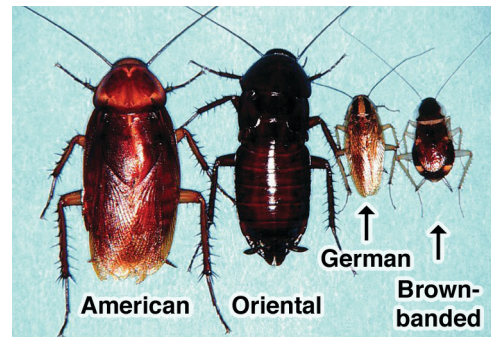
For people with asthma, eight units of cockroach allergen per gram of dust can trigger a reaction.

One female cockroach will produce 1,500 units of allergen per day<sup>3</sup>. One cockroach and its frass (feces and body parts) can trigger an asthma attack. An IPM program should work to kill cockroaches and clean up the bodies and frass. Cleaning up the frass using simple soap and water will remove the allergens and allow residents and staff to see when new evidence of cockroaches shows up. Use a vacuum with a HEPA filter when cleaning up cockroaches and frass. Responsibility for cleaning frass should be determined by the property manager and be made clear to all team members.

#### Types of cockroaches

It is important to know the different kinds of cockroaches because they have different preferences for food, water, and shelter, and control efforts will vary. Understanding what each kind eats and drinks and where it hides is the first step in controlling cockroaches.

*German cockroaches* are the highest priority because they can rapidly infest and have been associated with asthma. They are the most common kind of cockroach in housing. About  $\frac{3}{4}$  of an inch long, bronze, with two dark stripes behind the head, they can be found anywhere, but they especially like warmth, moisture, and darkness. If introduced into a home where they can find adequate food, water, and shelter, their populations may grow



Types of cockroaches. Photo: Department of Entomology, University of Nebraska-Lincoln.

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<sup>3</sup> National Academies Press, 2000. *Clearing the Air: Asthma and Indoor Air Exposures*. Executive Summary Institute of Medicine. ISBN 0-309-06496-1. See [www.nap.edu/books/0309064961/html](http://www.nap.edu/books/0309064961/html)

exponentially. They are difficult to eliminate because the female carries the egg case (with 35–40 eggs in it) to term. She protects the case until it is ready to hatch. But even if the mother cockroach dies from a pesticide, the eggs may still hatch. (This is another reason to clean up dead cockroaches.)

*Brown-banded cockroaches* are also infesters and like to be “high and dry.” Brown-banded cockroaches are about ½ inch long with side-to-side stripes. They are found in warm, dry spots, often up high. They live in scattered locations, often behind pictures and appliances. Unlike German cockroaches, the female brown-banded cockroach does not carry the egg case to term. Instead, she will lay the egg capsule and glue it to a surface in a dark, secluded area.

The two other kinds of cockroaches (American and Oriental) are not usually found in large numbers in homes. In homes, American and Oriental cockroaches are usually invaders. They typically enter the home seeking food or water but do not remain in large numbers. If you see them in a home, inspect adjacent sewers, basements, or outside areas for an infestation. Focus efforts on blocking them out of the home while at the same time getting control of the infestation at its source.

*American cockroaches* are also called Palmetto Bugs or Water Bugs. They are large, about 1½ inches long, like hot environments, and can glide in the air. They often live in sewers and basements where it is warm and damp. Sometimes they inhabit mulch or bushes. They may invade homes looking for water or warmth.

*Oriental cockroaches* are also called Water Bugs. They are about 1 inch long, wingless, and black in color. They prefer cool environments. They tend to live in sewers, basements, and mulch, and might be attracted inside when the weather is dry and they need water.



German cockroaches.



Brown-banded cockroaches.



American cockroaches.



Oriental cockroaches.

Photos: Department of Entomology,  
University of Nebraska-Lincoln.



## Signs of cockroaches

Cockroaches don't see buildings the same way we do. To them, any crack or hole is a door and the space between walls and floors is the safest place to travel and hide. Maintenance and repairs will disrupt cockroach travel and hiding, making them easier to find and kill. If a unit is being renovated, consider involving a PMP.

Cockroaches spend most of their time hiding. They like to hide in warm cracks and crevices where their bodies touch surfaces above and below. Nymphs and pregnant females don't travel much at all, but it's essential to kill them if you want to eliminate an infestation. Focus pest control efforts near where nymphs are found.



American cockroach hiding in a crevice.  
Photo: Department of Entomology, University of Nebraska-Lincoln.

If you see a live cockroach, especially during the day, it means that a good hiding area was disturbed or that all the good hiding places are taken and the infestation is severe. It is important to conduct a thorough inspection using a bright flashlight for evidence where cockroaches would find food, water, or a hiding spot. This means looking *up*, *down*, *behind* and *under* in target areas.

Signs to look for:

- Dead cockroaches and their parts
- Frass
- Egg cases
- Live cockroaches

## Prevention

Cockroaches get in a new place by hitchhiking on objects (often cardboard or furniture from an infested area) or by crawling along pipes or ductwork. Monitors must be in place to catch these introductions.

Housekeeping (sanitation) and good maintenance (exclusion) are the first two steps in preventing an introduction from becoming an infestation. Housekeeping means cleaning up food and water sources that attract cockroaches. Housekeeping also means eliminating places for cockroaches to hide by cleaning up clutter and disposing of trash and recycling properly and regularly. Maintenance provides exclusion to keep cockroaches from crawling in by sealing cracks and holes and fixing any water leaks or other water sources.



Frass and dead cockroach parts. Photo: Allison Taisey, Northeastern IPM Center.



Cockroach egg cases. Photo: Department of Entomology, University of Nebraska-Lincoln.

## Control

IPM is tailored to each situation. Your PMP is the expert. While this section will give you a basic understanding of cockroach control, it is important to discuss your particular situation with residents, other staff, and your PMP.

For each infestation, inspect and monitor, identify the kind of cockroach, and determine exactly where and how bad the infestation is. Then use appropriate IPM control methods:

- Sanitation
- Exclusion
- Vacuuming up cockroaches and evidence
- Pesticides (bait, insecticidal dusts, and insect growth regulators)

### *Monitor at all times*

Have staff or the PMP place sticky traps near areas where cockroaches might travel—at corners and near warmth, food, and water. There is no pesticide on these monitors. Sticky traps are information-gathering tools. They alert you to a growing infestation, allow the PMP to identify the type of cockroach, and help to locate the main source of the problem. To see changes that indicate a growing population, the traps must be checked and changed periodically. Write the date and specific location (e.g., 1/15/12, Unit 315, Bathroom) on the trap when placing it so that patterns and the time it took to catch the cockroaches will be known. Keep records of trap counts on the unit service records in the IPM log. “No cockroaches trapped” is evidence of successful pest control.



Sticky trap with cockroaches. Photo: Don Rivard, Rivard's Resources: IPM.

### *Clean up*

Eliminating sources of food and water is an important part of cockroach control. Cockroaches eat almost anything, including crumbs, grease, trash, and cardboard glue. It doesn't take much to feed them. Cockroaches can get water from sink drains, spills, pet bowls, and condensation. All of these water sources can be eliminated with good housekeeping and maintenance. Cutting off access to food and water (especially at night, when pests are active) will help control cockroaches.

### *Keep them out*

Seal or fix cracks or holes that cockroaches could get through. Take off peeling wallpaper or shelf liners. Young cockroaches want a crevice as thin as a dime. Adult males want a space the thickness of a quarter. Pregnant females want the most space of all to hide: two stacked nickels. All feel safe when wedged in a crevice.

To eliminate these hiding places, use

- silicone caulk;
- copper mesh (stuffed into cracks);
- screens; and
- door sweeps—always on boiler rooms and exterior doors to block out the crawling pests.

Making these types of repairs is good for the building and good for pest control. Although most expensive, silicone caulk will provide the longest lasting control since it adheres to surfaces and holds through the inevitable slight shifting of buildings.

#### Learn More

See “A Guidebook on IPM and Structural Repairs” at  
[www.bphc.org/hpfhi/OwnersManagers/Pages/home.aspx](http://www.bphc.org/hpfhi/OwnersManagers/Pages/home.aspx)

#### *Targeted chemical use*

Baits, insecticidal dusts, and insect growth regulators are chemical controls for cockroaches. But first, follow your PMP’s advice to repair structural problems to keep pests out. Residents and maintenance staff without applicator licenses should not apply pesticides. Liquid residual sprays should be a last resort and applied only by a PMP.

#### *Bait*

Baits are the most common and effective pesticide for cockroach control. Cockroaches eat the pesticide in the bait, go back to where they like to hide, and die. They die more slowly than if they had been sprayed. Other cockroaches, including newly hatched nymphs, feed on the dying cockroach’s frass and body and get poisoned, too.

Baits can be applied by using bait stations or in cracks and crevices with a syringe or bait gun. Tamper-resistant bait stations reduce the risk of exposure to humans and pets. When using a syringe or bait gun, a PMP applies bait in small dots in a crack or crevice where there is evidence of cockroaches, as close to the infestation as possible. The amount of bait used will depend on the level of infestation. When the bait dries out, the cockroaches will not be attracted to it.

Cockroaches must want to eat the bait. If an appropriate amount is applied near the cockroach hiding spots, they should eat all of it. If baits are contaminated with chemicals



Bait application using bait gun. Photo: Penn State IPM Program.

that the cockroaches recognize as poison or repellent, they will avoid them. This may happen if the resident applies aerosol cockroach killers in the same room. Strong-smelling cleaners can have the same effect. Nicotine from smoking may also contaminate the bait. Regular soap and water is effective for cleaning and won't ruin the bait's effectiveness.

Check to see if the bait is disappearing. If the cockroaches have not fed on the bait after a few days, place it in a different area. If that doesn't work, try a different kind of bait. Cockroaches may learn to avoid a type of bait. It is important to rotate the type of bait you use at least twice a year to keep them interested.

Key points about cockroach baits:

- The bait should ideally be the only food in the area (sanitation first).
- Use bait in every room with evidence of roaches.
- Baits are slow to kill; cockroaches feed on the bait and take it back to their hiding spots where other cockroaches live.
- Baits disrupt the life cycle because when newly hatched nymphs feed on the bodies of poisoned cockroaches, they ingest the poison and die.
- Some people don't trust baits because they do not see dead cockroaches. Baits do take a little longer to kill cockroaches than sprays or aerosols, but are more effective at eliminating an infestation.
- Baits are best used when there is an active infestation. Do not use as a prophylactic.

### *Insecticidal dusts*

Insecticidal dusts will kill insects in one of two ways, depending on the active ingredient. Dusts that contain boric acid act as stomach poisons. The cockroach walks through the dust, picks some up on its body, and ingests the poison when cleaning itself. Boric acid is not something that is intentionally eaten by cockroaches. Mixing the dust with sugar or other food is illegal and not effective. Other dusts, such as diatomaceous earth (DE), contain silica, which are like tiny shards of glass. DE affects the cockroach's outer layer so that it can't retain enough water to stay alive.

Apply dusts correctly, according to label directions. If the dust can be seen, there's too much or it's in the wrong place. If there is a pile, the cockroach will avoid it. Because insecticidal dusts can become airborne easily, ventilation systems should be turned off during application. As always, documentation is key. If an inspector finds a white powder in a unit, a record of what it is and where it was applied should be available so that a narcotics or hazmat crew is not needed.

Key points about dusts:

- Least-toxic active ingredients are boric acid and diatomaceous earth
- Kill cockroaches in three different ways:
  - A stomach poison
  - Dries them out by damaging their outer shell

- Contact kill as a result of an active ingredient in the dust
- Long-lasting if dry, but dusts may become ineffective if they get wet
- Effective if used correctly: dust lightly, never in piles
- Can be used in walls before fixing cracks if infestation exists or unit location warrants this preventative application

### *Insect Growth Regulators (IGRs)*

Insect Growth Regulators (IGRs) help finish off an almost-eliminated infestation. They prevent cockroaches from maturing, so they cannot reproduce. IGRs can come in many formulations, including sprays and baits. IGRs are slow-acting (it will take up to a month to see a change), but they are a good option when used in an IPM program. Using IGRs for German cockroaches may promote cockroaches feeding more heavily on bait until they die.

Key points about IGRs:

- Interfere with cockroach growth
- Available in many formulations
- Take a month to work
- Stay effective for a long time
- Compatible with other IPM methods; may enhance baits

## **RODENTS**

Mice, rats, squirrels, chipmunks, and woodchucks are all examples of rodents. The term “rodent” comes from the word “rodentia,” meaning gnawing animals. They gnaw wood, wires, and other rough materials and can cut through anything softer than steel. Rodents are not likely to start gnawing on a smooth surface. Making good repairs (no cracks, bumps, or uneven edges that promote gnawing) is essential to rodent control.

Mice and rats, the rodents we care most about in housing, reproduce quickly and are most active at night. They travel the same paths nightly, staying close to walls. Understanding rodent behavior is the key to planning a strategy to control them.

### **Why focus on rodents?**

Rats and mice carry various infectious diseases, including Salmonella and Lymphocytic Choriomeningitis—a serious disease for pregnant women. Mice leave a trail of urine drops wherever they go. Mouse urine can trigger asthma attacks in sensitive people. Rats may bite people when threatened. Most rat bites happen to babies in cribs where a rat may be



Rodents have teeth for gnawing.  
Photo: Bobby Corrigan, RMC Pest Management Consulting.

feeding on spilled milk or crumbs. Rodents damage property and can start fires by chewing on wires.

## Signs of rodents

When there are only a few, mice and rats can be difficult to spot in a building. Know what evidence to look for:

- Sightings.
- Noise—of activity or gnawing at night.
- Gnaw marks or holes—damage caused by chewing, nesting, or seeking access to food.
- Nests or burrows—rodents look for good hiding places both inside and outside. They usually nest where it's warm.
- Droppings—feces are the most common evidence of rodents. Rodent feces will have one pointed end.
- Rub marks—rodents get around by feeling with their whiskers and keeping the sides of their bodies in contact with a wall. They memorize paths and repeat them, leaving a greasy trail in the areas where their bodies touch the wall (if you look carefully, you may see their trails).
- Indicator pests—some flies, moths, and beetles are attracted to dead rodents, food that rodents bring into the wall, or the trash associated with rodents.

### *Rats and mice—know the difference*

Rats and mice have different habits. It is important to know the difference so you can plan your control.

- **Droppings:** The droppings (feces) of mice and rats are different. Mouse feces are about the size of ice cream sprinkles; rat droppings are larger—about the size of olive pits.
- **Size:** Adults can be distinguished by size, but it can be difficult to tell an adult mouse from a baby rat. The feet



Norway rat burrow (left) and mouse nest in a hat (right). Photos: Allison Taisey (left), stock (right).



Indian meal moth (left) and grain beetle (right), indicators of rodent food sources. Photos: Gary Alpert, Harvard University.



Blow flies (left) and hide beetles (right) may indicate unseen dead rodents. Photos: Gary Alpert, Harvard University (left) and Cornell Veterinary Entomology (right).

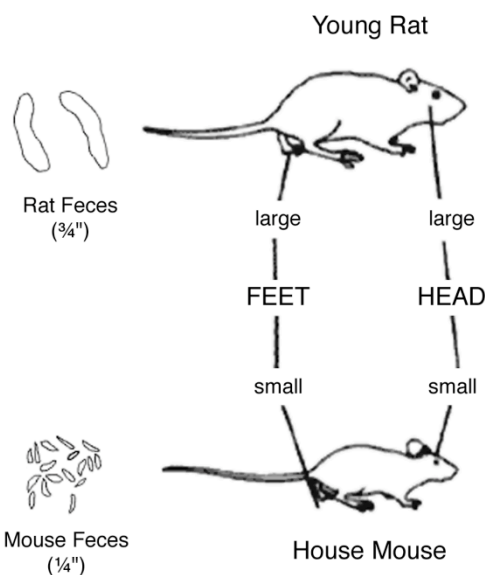


Illustration: CDC.

and head of mice seem in proportion to their bodies and their tails are thin and long. Rats have hind feet and heads that seem larger than they should be and their tails are thick at the base. Mice are not small rats and mice do not become rats when they go outdoors, but residents will often refer to both types of rodents as “mice.”

### *Rats*

Rats are usually outdoors and prefer to live in secluded areas. If there is plenty of food available, they will burrow and nest close to or inside buildings. In extreme cases, they will nest between walls. Rats can go 3–4 days without food but only 1–2 days without water. They may have preference for food that is easily found in their area. Rats will travel further than mice, but still prefer to stay within 450 feet of their burrow if possible. In general, rats are very smart, cautious, and afraid of new things. Keep these characteristics in mind when trying to trap rats. *Rats need a hole about the size of a quarter to enter a building.* Take action when evidence of one rat is seen.

Two of the most common types of rats are Norway rats and Roof rats.

- Norway rats (also known as Wharf, Sewer, and Brown rats) burrow in the ground and are found throughout the U.S. Their burrows are usually 1–3 feet deep and have at least two entrances. The main hole is 2–4 inches across and there will be one or more “bolt-holes” about three or more feet from the main entrance that may be small and well camouflaged. Burrows are often found under plantings and groundcover; near trash areas or outdoor trashcans; and under concrete slabs, tires, sheets of plywood, or other debris on the ground. Eliminating debris and trash is a crucial part of control. Doing so will make new burrows easier to spot and discourage rats from setting up shop. Do not stuff anything in a rat burrow or fill it in before the rats have been eliminated. Plugging a burrow hole will not control rats.
- Roof rats nest up high and are found in southern states and along the West Coast. They prefer to nest in secluded areas above ground, such as attics, soffits, overhead garage storage, in the vine cover of fences or buildings, and in woodpiles or other stored materials. They favor dense trees or trees with hollow cavities and the crowns of palm trees, especially when old fronds are not removed. Roof rats sometimes burrow in the ground, especially in hot, dry environments.

### *Mice*

Mice are curious, but usually stay within 30 feet of their nest. They need a hole the size of a dime to get in and some can get through a gap as narrow as a pencil. Mice can mate when they are one month old, so an infestation can grow quickly. Mice get most of the water they need from food and will nest in insulation, old clothes, cars, boxes, or shoes—almost anything. Because they reproduce quickly, it is important to take action when evidence of even one mouse is seen or heard.

## Prevention

Rodents can hitchhike into a building, but they usually come in from outside. Rodent prevention starts with sanitation (inside and outside your property) and maintenance (exclusion). These are the same principles that were discussed in the section on cockroaches. The prevention efforts used can be effective for both cockroaches and rodents. For rodents, make sure the repair has a smooth surface and door sweeps go all the way to the edges of the door. Good sanitation eliminates food sources and hiding places. Maintenance efforts are focused on sealing cracks and holes and eliminating water sources, in addition to making sure doors and windows have screens in good condition and have close-fitting seals or sweeps at the openings. Trash handling is also very important for rodent control, so pay special attention to cans, dumpsters, and trash chutes.

## Control

Tailor IPM to each situation. Your PMP is the expert. This section is intended to give you a basic understanding so that you can discuss rodent control with residents, other staff, and your PMP.

For each infestation, inspect, trap, identify the kind of rodent, and determine exactly where and how bad the infestation is. Then use the appropriate control methods discussed below:

- Limit access to food, water, and hiding places
- Exclude
- Trap
- Use rodenticides judiciously

### *Limit access to food, water, and hiding places*

Limiting rodents' access to food is critical. Knowing where and when they are feeding will help when deciding where to put the traps and what bait to use to get them to the trap. Rodents eat human and pet food. Trash cans and dumpsters need to be free of holes, covered, and emptied regularly. Place dumpsters away from the building on concrete pads and screen drain holes. Discourage residents from feeding birds or other wildlife. Proper sanitation (inside and out) is essential to rodent control. Food should be cleaned up and stored in a sealed container. If rodents are present, consider covering or storing pet food between feedings.

Clutter and debris both inside and out can provide perfect hiding spaces for rodents. Get rid of cardboard boxes, if possible. Items in storage should be placed on shelving at least 6 inches off the floor and 6 inches away from walls. While 6 inches is not high enough to keep rodents from jumping up, it does allow for inspection and trapping. Maintain landscaping and clean up outdoor areas to make the property less attractive to rats.



### *Exclude*

Rodents travel along walls and pipes. Pay attention to where pipes and utilities go through walls. Exclude rodents by sealing cracks, repairing holes, making sure screens are in good shape and adding door sweeps to all exterior and apartment doors. For larger openings, fill with copper mesh (which discourages rodents from gnawing) then cover the mesh with sealant, putty, or spackle. Metal mesh may also be used, but avoid “steel wool,” which will rust and deteriorate over time. All of these methods will exclude cockroaches, too, making these repairs and maintenance even more valuable over time.



Fill larger gaps with copper mesh (left). Seal gaps around pipes with caulk (right). Photos: Mary Maley, Northeastern IPM Center.

### *Trap*

Traps are an effective component of rodent control, but placement and timing are key. Rodents are likely to travel the same paths along walls every night. Setting traps where they already travel increases the chance of one running over the trap. Bait traps with nesting material (fabric, cotton balls, dental floss) or food. (Be conscious of people with nut allergies if you plan to use peanut butter). Always place snap traps against walls so they snap towards the wall. The more traps used, the more effective they will be. Have a PMP show you different orientations for effective trapping.



Set rodent traps so the trigger will snap towards the wall. Photo: Allison Taisey, Northeastern IPM Center.

Rats must become familiar with the trap before they will go over it. Leave traps baited but unset for several days, so the rats get used to feeding from them. Then re-bait and set all the traps at once. An alternative for quicker (in one night) rat trapping is to place three traps next to each other, bait across all three, and set only the middle one.

Traps are very effective for mice because mice are curious. Mice will be trapped easily the first night, but then the ones that were not trapped will be a bit more shy. Set many traps the first night; remove them in the morning. Set them again a week later, in slightly different locations.

Traps come in several forms and sizes for mice and rats:

- Snap traps—cheap, easy and effective.
- Glue traps—cheap and easy, but the rodent takes a long time to die and makes noise that can be disturbing. Adult mice and rats will usually avoid glue traps. They can be made more effective by using box-style traps or putting the glue board inside short sections of PVC pipe; mice prefer tunnels and dark areas and will not detect the glue boards until they cannot get away.

- Curiosity traps—can be very effective for mice. They come in many styles, but you must check them often and you may be left with a live animal that needs to be disposed of.
- Electronic traps—expensive. Electrocutes a mouse with a small electrical charge.
- Ultrasonic devices—have not been shown to be effective for any pests. Discourage residents from spending their money on these expensive devices.

### *Use rodenticides judiciously*

Rodents are mammals, like us. The chemicals used to poison them are more likely to affect us than some of those used to target insects. Only certified pesticide applicators should apply rodenticide baits and all should be contained in secure, tamper-resistant stations according to EPA regulations. Using rodenticides indoors should be a last resort in exceptional circumstances. When rodent baits are used indoors, the rodents can die indoors in inaccessible areas, causing odors that are difficult to remove. Know where all bait is placed and check it often to make sure no pets or children are able to get to it. Good record keeping in an IPM log will help everyone keep track of bait on the property.

## **BED BUGS**

Bed bugs are creating challenges for housing nationwide. One reason for the upswing in infestations is that as people travel, they carry bed bugs with them. Another reason is the change in availability and patterns of use of some pesticides. In addition, bed bugs have developed resistance to some pesticides.

### **Why focus on bed bugs?**

Bed bugs do not transmit disease, but they are classified as “a pest of significant public health importance” by the EPA and CDC. They can cause secondary infections after people scratch the bites. Many people with bed bugs cannot sleep and suffer negative effects from the sleep deprivation and the stress.

Unlike cockroaches and rodents, bed bugs get both their food and water from blood. The baits intended for cockroaches or rodents will not work on bed bugs because they do not have chewing mouthparts to eat the bait. Boric acid, which is a stomach poison, will not work for bed bugs because they will not ingest it. Since it is impossible to remove their source of food, control bed bugs by minimizing places where they can hide and by carefully monitoring.

## Signs of a bed bug infestation

- Live bed bugs*

A bed bug is a flat, blood-sucking insect ranging in size from a sesame seed (baby) to an apple seed (adult). It is light brown to mahogany red, depending on how recently it last fed.

A recently fed bed bug will be plump, but after it digests, it is back to being flat. Like cockroaches, baby bed bugs look like the adults, only smaller.

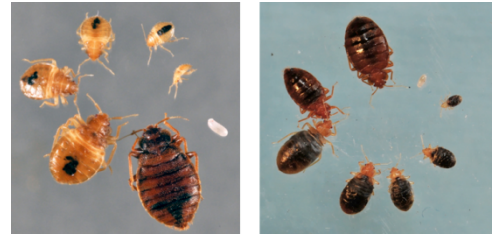
Bed bugs are often confused with other insects, such as ticks, fleas, and cockroach nymphs. Proper identification can save time, anxiety, and money. Remember: identification comes before control in IPM. The only way to confirm an active bed bug infestation is to find live bed bugs, collect a few, and have someone with experience identify them. Bed bugs will always be found crawling, never flying, jumping, or burrowing.
- Bites*

Seeing bites on a person may be the first indication that bed bugs are present and a thorough inspection is necessary. Bed bugs will come out of hiding to feed when they are hungry (usually once a week), feed until they are full, and then return to their hiding spots. Not everyone reacts to the bites and a person's reaction to bed bugs may change over time. A bed bug infestation cannot be confirmed by bites; live bed bugs must be found.
- Fecal spots*

These spots are the feces that the bugs leave after feeding. Sometimes they are called "blood spots." You may find blood spots on sheets where someone squished a recently-fed bed bug, but fecal spots are



Bed bug close up. Photo: Gary Alpert, Harvard University.



Left: unfed bed bugs; Right: after feeding. Photos: John Obermeyer, Rutgers University.



Often confused with bed bugs—ticks (left) and cockroach nymphs (right). Photos: Gary Alpert, Harvard University.



Bed bug bites. Photo: Bedbugger.com.



Fecal spots. Photo: Used with permission.

small dark dots. Fecal spots will be found around where bugs are hiding. Sometimes they will be present on bedding. Fecal spots are different from the frass left behind by cockroaches. Frass is gritty, like pepper, while fecal spots are smooth. A bed bug infestation cannot be confirmed by fecal spots; you must find live bed bugs.

- *Dead bed bugs*

Dead bed bugs alone can't be used to confirm an infestation; find live bugs.

- *Shed skins*

Bed bugs don't have stretchy skin. As they grow, they shed their outer layer, emerging as a larger version. They do this five times before they are fully grown.

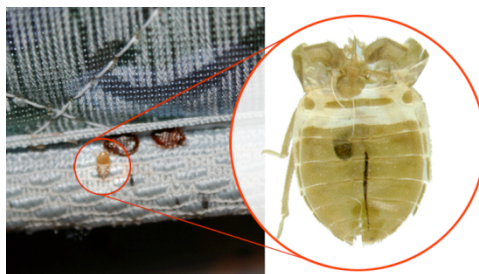
Shed skins look like hollow bed bugs and are the evidence of this growing process.

A bed bug infestation cannot be

confirmed by shed skins; live bed bugs must be found.



Two views of a bed bug. Photos: Gary Alpert, Harvard University.



Shed bed bug skin on mattress. Photo: Gary Alpert, Harvard University (inset).

## Prevention

Prevention is key. Enact policies and procedures that limit bed bug introduction to new areas. New infestations may start when

- infested items are moved through the building without being wrapped in plastic;
- infested items are rented, picked up, or purchased and brought home;
- staff or home visitors work in multiple units per day without taking precautions;
- residents travel or visit each other without taking precautions with their belongings;
- bed bugs crawl between people's belongings in common areas; or
- bed bugs travel along pipes or on wires from an infested adjacent unit.

For residents and those who work in units (e.g., staff, health aides and contractors):

- keep coats, backpacks, purses, and bags off beds, recliners, and sofas at home and while out;
- avoid bringing home used furniture;
- routinely inspect with a flashlight, launder bedding, vacuum, and meet housekeeping standards; and
- look for signs of bed bugs when sleeping away from home.

In units:

- avoid sitting or placing items on potentially infested surfaces;
- wear a protective layer (e.g., disposable coveralls) when moving infested items;
- wrap infested items before moving them through a building for proper disposal; and
- prepare before bed bugs are reported by minimizing clutter and installing encasements and monitors.

In the main office/community areas:

- replace fabric-covered furniture that has many crevices with plastic or metal items;
- have residents set their belongings in plastic totes during community meetings.

If you suspect bed bugs have crawled onto you or your belongings, change to a clean set of clothes and put the fabric item with bed bugs on it in a hot dryer for 30 minutes.

These precautions (protective layers, plastic totes, etc.) can be used community-wide to prevent spreading bed bugs among residents. Precautions should never be targeted at an individual resident; residents can get bed bugs through no fault of their own. When working in a resident's home while wearing protective layers, explain your precautions as standard operating procedures and that bed bugs are not caused by poor sanitation.

#### *Introduction vs. infestation*

The introduction of a bed bug into a new place does not have to lead to an infestation. Careful cleaning and monitoring will make it possible for newly introduced bed bugs to be spotted and removed before they can reproduce and create an infestation. Areas that are most likely spots for introduction of bed bugs are places where people frequently congregate, set down belongings, or sit or lie down for long periods of time. Infestation is likely to occur in these areas where bed bugs can crawl up on furniture or bedding and feed on a person for five minutes or more without being noticed.

## **Control**

In multifamily housing, one infestation can quickly spread throughout the development. Inspect the reporting unit and adjacent areas as soon as possible. If bed bugs are identified, take action. Finding infestations and taking action before they grow and spread is how to manage bed bugs property-wide. Bed bug control requires a community response. Educate everyone about the importance of inspection, monitoring, and preventing the spread of bed bugs. Building staff and resident support specialists can help to identify people who may need support services for cleaning and inspection.

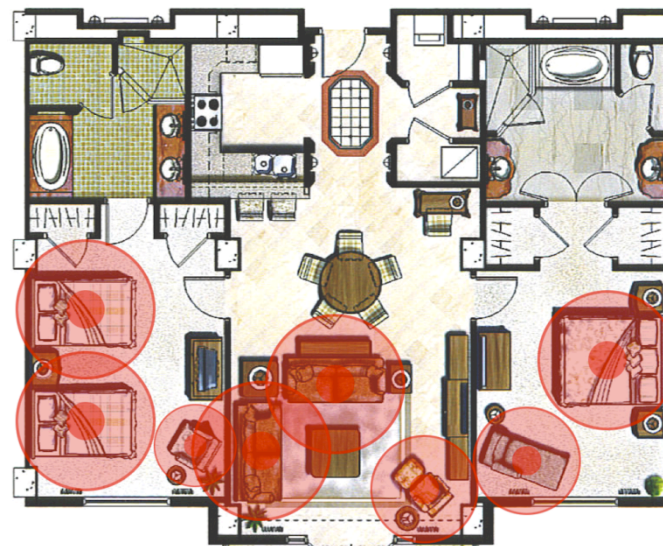
A bed bug control program may include the following:

- Inspection and monitoring
- Vacuuming
- Isolation
- Freezing

- Heat
- Pesticides

### *Inspection and monitoring*

Bed bugs are small and very good at hiding. Most of the time they like to hide in cracks and crevices near where they last fed. Bed bugs will wedge into any crack that a credit card edge can fit into. Hiding spots can be in the furniture where people sleep, such as sofas, recliners, mattresses, box springs, and bed frames; the furniture next to the bed, such as nightstands, lamps, and alarm clocks; and picture frames on the walls, baseboards, the edges of the carpets, electrical outlets, and draperies.



Typical "hot spots" within the home.

Use a flashlight to look for evidence. Bed bugs often hide together, but not always. If bed bugs are found, keep a few for identification and inspect all adjacent units. Document all observations in the IPM log.

Some professionals use specially trained dogs to detect bed bugs. Inspection with canines is useful for detection, but as with inspection by humans, there is potential for error. You should be able to verify the presence of bed bugs where the dog "alerts" the majority of the time. The dog's effectiveness depends upon the quality of its training, the ability and consistency of its trainer, and the conditions in the area of inspection. If trained and handled properly, bed bug-sniffing dogs should inspect much more effectively and in a much shorter time than a human.

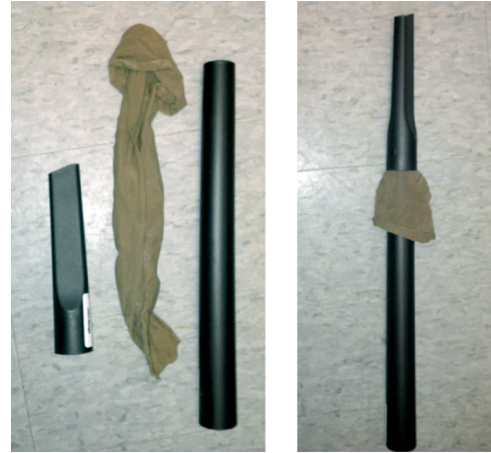
Prevention of bed bugs must include good monitoring. While monitors alone will not control a bed bug infestation, they will trap and kill some. More importantly, they help find bed bugs or confirm their presence so that management can take further action. Passive monitors do not have an attractant and must be placed where the bugs will walk over them. Active monitors have at least one attractant—heat, pheromone, or CO<sub>2</sub>.

### *Vacuuming*

Every bed bug treatment will likely involve some vacuuming, even if it's just the floors to make the PMP's job easier. Have a metal spatula or other tool available for dislodging bed bugs from crevices as you vacuum. After vacuuming, take the bag out, seal it in a plastic

bag and throw it away. A canister vacuum can also be used. After every use, empty the canister into a bag, tie it off, throw it away and wash out the canister. Either way, if the vacuum cleaner is turned off in the middle of a job, be sure to plug up the hose with a paper towel. This will prevent bed bugs from crawling back out the hose and the towel will wipe the inside of the hose when you turn the vacuum back on.

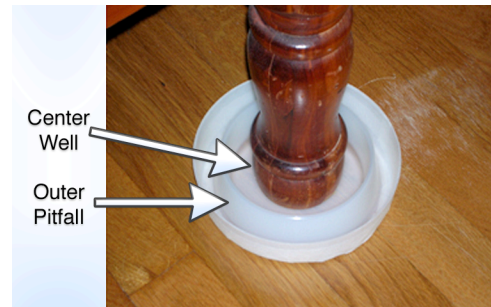
Another tool to use with vacuum cleaners is knee-high pantyhose. Stuff the toe down the vacuum hose at the sucking end. Keep pushing it down the hose until about 8 inches are sticking out. Fold the open end of the pantyhose over the vacuum nozzle (like folding a trash bag over the edge of a trash can) and secure it with a rubber band. Put the crevice tool on the vacuum hose over the pantyhose. The bugs will get trapped in the pantyhose and won't get inside the vacuum. When finished, remove the rubber band, tie off the pantyhose and throw it away. Note that vacuuming is also a great control method for cockroaches.



A vacuum attachment with nylon stocking inserted will trap bed bugs. Photos: Mary Maley, Northeastern IPM Center.

### *Isolation*

Bed bugs can't claw or chew through anything. They're also not good at climbing up smooth metal, plastic, or glass. Use plastic totes, sealed bags, and fabric encasements designed for bed bug exclusion. The most common site of escape from encasements is through the zipper, so bed bug encasements should have special zipper backing.



Moat-style bed bug interceptor. Photo: Susan McKnight.

To isolate a bed with a frame, pull it away from the wall on all sides and away from any surrounding furniture. Put a bed bug interceptor (e.g., ClimbUp) under each bed frame leg.

### *Freezing*

Although research is ongoing, it seems bed bugs and eggs must be frozen at 1°F for 10 hours to die. Household freezer temperatures vary too much to work effectively. PMPs may offer dry ice freezing treatments. The equipment is designed to spray the dry ice snow over objects, flash freezing the bed bugs and their eggs. Only a professional should use this method because dry ice can be dangerous. This system must be used with other methods, but may be a good option for sensitive objects, like art.

### *Heat*

Bed bugs and their eggs die when exposed to temperatures of 120°F for about 30 minutes. Some companies have equipment—including heaters, fans, monitors, and computer programs for tracking temperatures—to heat up an entire area. Not every area can be treated with heat. The key to any heat treatment is to expose every inch of every object to at least 120°F. Because the heat can't reach inside wall voids, the PMP will treat the voids with an insecticidal dust. Preparations for a heat treatment ensure all items are accessible; items that can't take the heat (candles, aerosol containers, and medications) are removed ahead of time.

Heat treatments are also available on a smaller scale. For luggage and other small items, try a portable heat chamber or steamer.

The hot setting on a dryer is one of the best options for bed bug management programs because it is accessible and easy. Bed bugs will die on dry fabric after 30 minutes on the hottest setting in a dryer. Even dry-clean-only items can go in a dryer (it's water that these fabrics can't tolerate). Check the lint trap for dead bed bugs.

### *Pesticides*

When considering pesticide use for bed bugs, carefully research the available products to be sure to choose the least toxic method for the job. The EPA's bed bug website has a bed bug pesticide search tool at: [cfpub.epa.gov/oppref/bedbug/](http://cfpub.epa.gov/oppref/bedbug/). Remember that if you use pesticides, the label is the law. Read and follow the directions closely.

Note: If you suspect residents are putting pesticides on a mattress, have someone talk to them to make sure they are following label directions. Non chemical alternatives, like vacuuming and putting on an encasement, are preferred when possible.

### PMPs should

- always thoroughly inspect the reporting unit and the adjacent areas;
- ask residents from reporting units about other units and areas in the building where they visit or spend time, to target inspection and monitoring there as well;
- provide site-specific preparation and follow-up instructions in multiple languages;
- follow the label on all products used; and
- return to verify elimination or treat if bed bugs are still present.

#### **Learn More**

For resources on bed bug control, including the most current HUD notices, see appendices A, B, and C and visit

[www.stoppests.org/pest-solutions/bed-bugs/](http://www.stoppests.org/pest-solutions/bed-bugs/) and [www.epa.gov/bedbugs/](http://www.epa.gov/bedbugs/)



## **OTHER COMMON PESTS IN HOUSING**

- Mosquitoes (transmit West Nile Virus—breed in standing water)
- Ticks (transmit Lyme Disease—get on people from bushes and rodents)
- Fleas (cause itchy welts—come into buildings on pets and wild animals)
- Bird and rodent mites (make us itch—may move into a unit when the wild host moves out)
- Lice (cause itching—spread on used or shared items and via person-to-person contact)
- Dust mites (cause asthma—flourish with high humidity and poor sanitation)

These pests are not covered in detail in this manual. Visit [www.stoppests.org/pest-solutions/](http://www.stoppests.org/pest-solutions/) for additional resources.

All pests need food, water, and shelter. IPM works by taking away the things pests need using sanitation, monitoring, and exclusion. Many of the control methods described for cockroaches, rodents, and bed bugs will also control these pests.



# Expand Your Program

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## FUNDING

You may be eligible for state, regional, and other funding opportunities that are specific to your situation. Universities, nonprofits, and city departments may be willing to fund projects related to healthy housing and local concerns where IPM plays a role. Search federal opportunities and apply for federal grants through Grants.gov. For guidance: [www.grants.gov/applicants/find\\_grant\\_opportunities.jsp](http://www.grants.gov/applicants/find_grant_opportunities.jsp).

More resources at [www.stoppests.org/what-is-ipm/funding-sources/](http://www.stoppests.org/what-is-ipm/funding-sources/).

## EVALUATING YOUR PROGRAM

PHAs achieve positive results with IPM programs by tracking costs, health impacts, and efficiency. Collect data when you begin your program so you can show change.

### Cost

IPM can save property managers and tenants money in the long term. Calendar-based pesticide applications do not provide long-term control and rarely solve pest problems. Keep track of the following costs to justify an IPM program:

- an IPM contract with a licensed pest management professional, including both contract price and any additional expenses billed by the contractor;
- materials and time for staff or contractors to seal holes, cracks, and crevices;
- time invested by property managers or resident support staff for one-on-one interventions with residents to get their units in compliance with housekeeping standards and pest control preparation instructions; and
- supplies for residents that help them do their part, such as cleaning supplies, monitors, mattress encasements, etc.

Consider also the benefits, such as whether you've been able to

- leverage funding as a result of implementing IPM (e.g., use a small grant to bring in additional dollars);
- create positions or marketable skills for residents;
- save money as a result of fewer complaints;
- lower pesticide costs; or
- lower energy costs as a result of sealing holes and eliminating gaps beneath doors.

## **Health impacts**

Pests such as cockroaches, rodents, and bed bugs present potential health problems. To measure health benefits, consider tracking

- amount of pesticide used on the exterior of the property;
- amount of pesticide used in buildings;
- resident satisfaction;
- employee satisfaction;
- health improvement, such as reduction in asthma attacks;
- improved indoor air quality;
- elimination of water leaks that could cause mold; or
- number of pests caught on monitoring devices.

## **Efficiency**

To measure efficiency, consider tracking

- decrease in work orders related to pest control;
- improvement in REAC and pest inspection results;
- retention of staff and residents; or
- improved partnerships with community organizations (e.g., social services, health department, Cooperative Extension).

## **SPREADING YOUR SUCCESS**

Residential properties are in a good position to become community leaders in pest control. Share successes and knowledge with other landlords, organizations, and city departments. Host trainings that are open to the community, reach out to home health aides and others who work within your communities, and connect with local media. Track the number of people the program reaches.

### **Expand your program**

When implementing IPM for the first time, property managers have the most success if they focus on one building or property at a time. Doing so allows staff to focus and work together in a selected area until the pest problem is brought under control. The goal is to bring pest management activities from a reactive model (treating when infestations are present) to a proactive model (with a focus on prevention). After you document success in the first location, add buildings or other properties to the IPM program one at a time with the same strategy.

### **Strategic partnerships**

Everyone can come together on the issue of pest-free housing. Local support agencies can offer resources and know-how to help address problems when a property manager might not have the time or expertise. Measure resources delivered and obtained through these partnerships to help qualify the residential property as a community asset.

## **A FINAL WORD**

Remember that IPM may take more attention than calendar-based extermination at first, but the long-term results of this proactive approach to pest management ultimately saves money and time, building a healthier living and working environment for your staff and residents.



## List of Appendices

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The appendices in this guide are current as of June 2012. For the most current materials see [www.stoppests.org](http://www.stoppests.org).

- Appendix A. U.S. Department of Housing and Urban Development Office of Public and Indian Housing Promotion of Integrated Pest Management (IPM) as an environmentally-sound, economical and effective means to address a major resident concern (Notice: PIH-2011-22)
- Appendix B. U.S. Department of Housing and Urban Development Office of Public and Indian Housing Guidelines on Bedbug Control and Prevention in Public Housing (Notice: PIH 2012-17)
- Appendix C. U.S. Department of Housing and Urban Development Guidelines on Addressing Infestations in HUD-insured and Assisted Multifamily Housing (Notice: H 2012-5)
- Appendix D. IPM Focus Unit Tracking Log
- Appendix E. Sample Request for Proposal (RFP) and Scope of Work for Pest Control (including site-specific IPM plan guidelines)
- Appendix F. Suggested Housekeeping and Lease Language
- Appendix G. Employee Certificate of Completion

### Online resources:

1. HUD Notices  
[www.stoppests.org/ipm-training/training-materials/](http://www.stoppests.org/ipm-training/training-materials/)
2. RFP Example, including guidelines on developing an IPM plan  
[www.stoppests.org/file/Sample-RFP](http://www.stoppests.org/file/Sample-RFP)
3. Fact Sheets for 7 Common Pests  
[www.stoppests.org/file/Seven-Pest-Factsheets](http://www.stoppests.org/file/Seven-Pest-Factsheets)
4. Case Studies  
[www.stoppests.org/success-stories/case-studies/](http://www.stoppests.org/success-stories/case-studies/)







U.S. Department of Housing and Urban Development  
Office of Public and Indian Housing

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SPECIAL ATTENTION OF:  
Regional Directors; State and Area  
Coordinators; Public Housing Hub  
Directors; Program Center Coordinators;  
Troubled Agency Recovery Center Directors;  
Special Applications Center Director;  
Administrators; Offices of Native American  
Programs; Public Housing Agencies; Public  
Housing; Housing Choice Voucher/Section 8;  
Tribally Designated Housing Entities;  
Indian Tribes; Resident Management  
Corporations

NOTICE: PIH-2011-22

Issued: April 26, 2011

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Cross Reference:  
24 CFR 903.7(e) (2)  
24 CFR 990.165  
7 U.S.C. 136r-1 Integrated Pest  
Management  
This Notice Supersedes  
PIH Notice 2009-15, PIH Notice  
2008-24, PIH Notice 2007-12

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**Subject:** Promotion of Integrated Pest Management (IPM) as an environmentally-sound, economical and effective means to address a major resident concern.

1. **Purpose.** The purpose of this Notice is to promote and encourage the use of IPM by Public Housing Authorities (PHAs), Indian tribes, Tribal Designated Housing Entities (TDHEs), and owner/agents providing assistance through the HCV program. This notice provides guidance to Public Housing Authorities (PHAs) on the benefits of IPM, additional technical assistance and training opportunities for PHAs. Pest management is integral to the provision of safe and sanitary housing. In accordance with 24 CFR 903.7 (e) (2), PHAs must include in their PHA plans a description of any measures necessary for the prevention or eradication of pest infestations. IPM is an ecological approach using an array of methods to prevent and control pests with reduced reliance on pesticides. Procedures contained within this notice remain in effect until superseded by subsequent HUD Directive or guidance.
2. **Applicability.** This notice applies to PHAs administering the public housing and project based Section 8 program, and may be of interest to Indian tribes/TDHEs as well as owners/agents providing assisted housing through the Housing Choice Voucher (HCV) Program. The decision to use IPM techniques in their ongoing pest control effort is under PHA, Indian tribes/TDHE discretion. 24 CFR 990.165(a) covers cost associated with Project Expense Level (PEL) such as maintenance expenses. IPM is a maintenance expense.
3. **Background.** The goal of IPM as defined by the Environmental Protection Agency (EPA) is to control pests by the most economical long term means, and with the least possible hazard to people, property, and the environment. To undertake IPM, project managers should be committed to ongoing or continuous monitoring and record keeping, educational outreach to residents and staff as well as implementing good communication strategies between residents and building managers. IPM methods include: restricted pest access to

food/water; vigilant sanitation and waste management; mechanical control; physical barriers; structural maintenance; and, where necessary, the judicious use of pesticides.

4. **Fundamentals of IPM.** IPM efforts must involve PHA staff, contractors, residents, and include:
  - a. Communicating the PHA’s IPM policies and procedures to be provided in the appropriate format to meet the needs of all residents including persons with limited English proficiency and in formats that may be needed for persons who are visually or hearing impaired. This applies to administrative staff, maintenance personnel, and contractors as well.
  - b. Identifying the environmental conditions that lead to pests and educating residents.
  - c. Identifying pests and immediately reporting the presence of pests.
  - d. Establishing an ongoing monitoring and record keeping system for regular sampling and assessment of pests, surveillance techniques, and remedial actions taken, include establishing the assessment criteria for program effectiveness. This is a highly effective preventative measure that can help reduce the possibility of a pest infestation outbreak.
  - e. Determining, with the involvement of residents, the pest population levels – by species – that will be tolerated, and setting thresholds at which pest populations warrant action.
  - f. Improving waste management and pest management methods.
  - g. Selecting the appropriate pesticides and insecticides to use. Some residents may suffer from Multiple Chemical Sensitivity or other Environmental Illnesses.
  - h. Ongoing efforts to monitor and maintain structures and grounds (e.g., sealing cracks, eliminating moisture intrusion/accumulation) and adding physical barriers to pest entry and movement.
  - i. Developing an outreach/educational program to ensure that leases reflect residents’ responsibilities for: (1) proper housekeeping, which includes sanitation upkeep and the reduction of clutter, trash removal and storage, (2) immediately reporting the presence of pests, leaks, and mold, (3) cooperating with PHA specific IPM requirements such as obtaining permission of PHA management before purchasing or applying any pesticides, and (4) avoiding introduction of bed bugs and other pests into buildings on used mattresses and other recycled furniture. See “Preventing and Getting Rid of Bed Bugs Safely,” New York City Department of Health and Mental Hygiene <http://www.nyc.gov/html/doh/downloads/pdf/vector/bed-bug-guide.pdf>
  - j. Check with local health department to determine if your state has laws for re-used furnishings.
  - k. The judicious use of pesticides when necessary, with preference for products that, while producing the desired level of effectiveness, pose the least harm to human health and the environment. Residents should notify PHA management before pesticides are applied.
  - l. Providing and posting “Pesticide Use Notification” signs or other warnings.
5. **Health Concerns.** Pests may adversely impact the health of residents and contribute to worsening some diseases, such as allergies and asthma. Cockroaches can cause asthma in children and can transfer disease-causing organisms to food and surfaces they contaminate. Rodents, such as mice and rats, carry disease, can trigger asthma attacks and even cause fires by gnawing through electrical wires. Although bed bugs are not known to transmit infectious diseases, their bites can lead to secondary infections. Bed bugs can cause

emotional distress and sleep deprivation for residents as well. Bed bug infestations can spread quickly and must be treated aggressively. All pest control methods are targeted to protecting the health of residents and staff. Although applying pesticides may be effective in eliminating pest populations, many of these chemicals are associated with health and/or environmental risks, and their use should be minimized if alternative methods exist. This is especially important in buildings housing vulnerable age groups such as children or the elderly and in buildings housing residents with compromised immune systems or who may suffer from Multiple Chemical Sensitivity and other environmental illnesses. Therefore, IPM offers the potential to ensure efficacy of pest elimination while protecting the health of residents, staff and the environment.

6. **Building.** Most of the effective methods of pest elimination, including ongoing repairs, erection of barriers, and monitoring, will extend the useful life of a building and as a result generate significant savings that could offset the costs of the pest control. Many of these non-application methods, including structural maintenance, and inspecting for and repairing leaking pipes and cracks in roofs, walls, and windows are effective in preventing moisture intrusion and accumulation. Additionally, IPM-conscious PHAs assess the need to install physical barriers to both pest entry and pest movement within every structure thereby reducing the spread of pest infestations.
7. **Implementation.** HUD promotes IPM as a pest control method. IPM effectively eliminates pests in safer and long term cost-effective ways than traditional pesticide treatments. IPM frequently has proven to be more effective in reducing pest populations than relying solely on broadcast pesticides. The Boston Housing Authority (BHA) experienced approximately one-third reduction in pest related work orders over multiple years in multiple sites. BHA has maintained this reduction and now uses IPM in all its BHA maintained properties. Continuation of the IPM program after initial development cost is considered preventative maintenance expense and is an eligible program activity under the Public Housing Operating Subsidy as codified at 24 CFR 990.165. Successful IPM requires resident participation through proper housekeeping, reporting of pest infestations, and trash removal. Residents can monitor pest populations and assist in identifying how to eliminate access to food and water for pests. Resident organizations must be prepared to assist residents who need help to follow the IPM policy. HUD encourages PHAs to partner with local pest management organizations.
8. **Procurement of IPM Services.** If a PHA uses an outside contractor for pest control, the PHA's pest control/IPM policies and procedures should be incorporated into the specifications or statement of work for the pest management contract. PHAs using an outside contractor are encouraged to use companies that are trained and certified to provide IPM services either through Green Shield certified (<http://www.greenshieldcertified.org/>) or Green Pro (<http://www.npmagreenpro.org/>). The PHA should also consider training for maintenance staff, residents, Resident Councils as well as PHA administrative staff who oversee housing developments or administer occupancy and rental duties such as unit housekeeping inspections.
9. **PHA Maintenance Staff.** If a PHA uses its own maintenance staff for pest management, proper training in the PHA's IPM procedures is essential. It is especially critical to be trained in the proper treatments methods PHAs can use when treating for bed bugs. The contract administrator for any pest management contract should be trained as well. Successful results rely upon proper implementation; training is therefore of critical

importance. IPM training is available at: <http://www.stoppests.org/> and <http://www.healthyhomestraining.org/ipm/training.htm>.

10. **Area of High Concern, Bed bugs.** As the number of bed bug infestations rise throughout the country, HUD is in the process of developing protocols to address this growing problem. HUD is addressing the unit inspection process as well as developing the tools necessary for PHAs to identify, treat and monitor the effectiveness of bed bug treatments in its portfolio. Identifying, reporting, treating and monitoring pest infestations are all critical components of IPM and are effective in addressing the bed bug problem.
11. **Reference Materials for Implementing IPM.** The below list of IPM practices does not constitute a HUD endorsement of any specific practice, but provides IPM ideas and practices that have been used to improve pest management while reducing unnecessary dependence on pesticides. HUD encourages PHAs, Indian tribes/TDHEs to share their policies, procedures, resident leases, and written case studies so that these may be published on the HUD website for others to read.
  - a. National Center for Healthy Housing: <http://www.healthyhomestraining.org/ipm>
  - b. Bed Bugs: “What’s Working for Bed Bug Control in Multi-family Housing”  
[http://www.healthyhomestraining.org/ipm/NCHH\\_Bed\\_Bug\\_Control\\_2-12-10.pdf](http://www.healthyhomestraining.org/ipm/NCHH_Bed_Bug_Control_2-12-10.pdf)  
<http://pestworld.org/pest-world-blog/the-bed-bug-hub-one-stop-shop-for-bed-bug-information>
  - c. National Pesticide Information Center: <http://www.npic.orst.edu/>
  - d. Integrated Pest Management (IPM), A Guide for Managers and Owners of Affordable Housing, Boston Public Health Commission:  
[http://http://asthmaregionalcouncil.org/uploads/IPM/asthma\\_ipm\\_guide.pdf](http://http://asthmaregionalcouncil.org/uploads/IPM/asthma_ipm_guide.pdf).
  - e. U.S. Environmental Protection Agency:
    - i. General IPM information <http://www.epa.gov/opp00001/contolling/index.htm>  
housing): <http://www.epa.gov/pesticides/ipm>
    - ii. EPA staff contacts: <http://www.epa.gov/pesticides/about/contacts.htm#ipm>
    - iii. List of EPA IPM publications and instructions for ordering documents:  
<http://www.epa.gov/oppfead1/Publications/catalog/subpage3.htm>
  - f. Massachusetts Department Agriculture Resources – Building Managers and Landlords:  
[http://www.mass.gov/agr/pesticides/docs/CIB\\_Building\\_Managers.pdf](http://www.mass.gov/agr/pesticides/docs/CIB_Building_Managers.pdf)
  - g. HUD funded “Healthy Public Housing Project” conducted by the Harvard School of Public Health In Boston Public Housing, <HTTP://www.hsph.harvard.edu/hphi/>
  - h. Bed Bug Fact Sheets in English and Spanish produced by Dr. Dini Miller,  
<http://www.vdacs.virginia.gov/pesticides/bedbugs-facts.shtml>
12. **PHA Case Studies On IPM Application.**
  - i. Cuyahoga Housing Authority:  
[http://www.healthyhomestraining.org/ipm/Case\\_Study\\_Cuyahoga\\_10-20-07.pdf](http://www.healthyhomestraining.org/ipm/Case_Study_Cuyahoga_10-20-07.pdf)
  - ii. Boston Housing Authority:  
[http://www.healthyhomestraining.org/ipm/casestudy\\_holgate.pdf](http://www.healthyhomestraining.org/ipm/casestudy_holgate.pdf)
  - iii. New York City Department of Health, Columbia University and the New York City Housing Authority: <http://www.beyondpesticides.org/dailynewsblog/?p=1604>
13. For further information contact Leroy Ferguson at (202) 402-2411 or email at [Leroy.Ferguson@hud.gov](mailto:Leroy.Ferguson@hud.gov) or you can contact the nearest HUD Field Office of Public Housing

within your state. Indian tribes and TDHEs should contact the nearest HUD Office of Native American Programs. Locations of these offices are available on HUD's website at <http://www.hud.gov>.

\_\_\_\_\_/s/  
Sandra B. Henriquez, Assistant Secretary for  
Public and Indian Housing





**U.S. Department of Housing and Urban Development  
Office of Public and Indian Housing**

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**SPECIAL ATTENTION OF:**

NOTICE: PIH-2012-17

Regional Directors; State and Area  
Coordinators; Public Housing Hub  
Directors; Program Center Coordinators;  
Troubled Agency Recovery Center Directors;  
Special Applications Center Director;  
Administrators; Offices of Native American  
Programs; Public Housing Agencies;

Issued: February 28, 2012

Expired: This Notice remains  
in effect until amended, superseded,  
or rescinded

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Housing; Housing Choice Voucher/Section 8;  
Tribally Designated Housing Entities;  
Indian Tribes; Resident Management  
Corporations

Cross References:

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SUBJECT: Guidelines on Bedbug Control and Prevention in Public Housing

**I. Purpose**

Bedbug infestations have become a serious problem in housing throughout the country. Public Housing properties are not immune to infestations. This Notice provides information and references to best practices regarding the prevention and control of bedbug infestations. It also provides guidance on the rights and responsibilities of HUD, Public Housing Agencies (PHAs) and tenants with regard to bedbug infestations.

**II. Background**

After a long absence, bedbug infestations are a growing problem in the United States today. According to the United States Environmental Protection Agency (EPA), bedbug populations have increased dramatically. Bedbugs are considered a pest of significant public health importance by the EPA and the Centers for Disease Control and Prevention (CDC). Although the insects are not known to transmit disease, bites may itch and cause an allergic reaction in some people, which may lead to secondary infections. The presence of bedbugs may also contribute to stress or anxiety.

Experts suspect the resurgence is associated with greater international and domestic travel, lack of knowledge regarding the complex measures needed to prevent and control bedbugs, changes in pesticide availability and technology, and increased resistance of bedbugs to available pesticides. Bedbugs are not an indicator of poor sanitation, but excess clutter can provide them more places to hide, making early detection and targeted control

difficult.

HUD has received numerous reports of bedbug infestations in Public Housing properties in various regions. HUD is working closely with other federal agencies to develop and share best practices for preventing and controlling bedbugs.

### **III. Applicability**

This notice applies to PHAs administering the public housing and project based Section 8 program. It may also be of interest to Indian tribes/TDHEs as well as owners/agents providing assisted housing through the Housing Choice Voucher (HCV) Program.

### **IV. Prevention of Bedbug Infestations**

The best approach to bedbug management is to prevent an infestation from occurring in the first place. Federal agencies, such as EPA and HUD, are working in tandem to develop and share recommendations to prevent bedbug infestations.

PHAs are strongly encouraged to develop an Integrated Pest Management (IPM) Plan. Such plans describe the ongoing efforts the property management will take to prevent and respond to pests. For more details on IPM, please see the online guide at <http://www.stoppests.org>. According to the EPA, principles of IPM for bedbugs include:

- Raising awareness through education on prevention of bedbugs;
- Inspecting infested areas, plus surrounding living spaces;
- Checking for bedbugs in luggage and clothes when returning home from a trip;
- Looking for bedbugs or signs of infestation on secondhand items before bringing the items home;
- Correctly identifying the pest;
- Keeping records – including dates and locations where pests are found;
- Cleaning all items within a bedbug infested living area;
- Reducing clutter where bedbugs can hide;
- Eliminating bedbug habitats;
- Physically removing bedbugs through cleaning;
- Using pesticides carefully according to the label directions; and,
- Following up on inspections and possible treatments.

In addition or as part of an IPM plan, PHAs are strongly encouraged to take the following preventive steps:

- Provide training for staff to identify bedbugs, and to perform ongoing prevention actions as outlined in the IPM. When a community is at high risk for bedbugs (for example, if the community has experienced prior infestations), periodic building inspections are recommended.



- Actively engage residents in efforts to prevent bedbugs. Education and involvement of tenants is a critical component of IPM for bedbugs. Bedbugs may often go undetected and unreported and because they are active at night tenants may not be aware of their presence. PHAs may wish to hold workshops for tenants to learn to identify bedbugs, to create unfriendly environments for pests, and to report suspicions of bedbugs as soon as possible.
- Provide orientation for new tenants and staff, and post signs and handouts regarding bedbug prevention.

More information on bedbug prevention may be found by accessing the following websites:<sup>1</sup>

- **Healthy Homes Training:** *What's Working for Bedbug Control in Multifamily Housing?: Reconciling best practices with research and the realities of implementation.*  
[http://www.healthyhomestraining.org/ipm/NCHH\\_Bed\\_Bug\\_Control\\_2-12-10.pdf](http://www.healthyhomestraining.org/ipm/NCHH_Bed_Bug_Control_2-12-10.pdf).
- **National Pest Management Association Bedbug Hub:**  
<http://pestworld.org/pest-world-blog/the-bed-bug-hub-one-stop-shop-for-bed-bug-information>
- **National Pest Management Association Best Practices Website:**  
<http://www.bedbugbmps.org>
- **Environmental Protection Agency:**  
<http://www.epa.gov/pesticides/bedbugs/>
- **Public Housing Environmental Conservation Clearinghouse (PHECC)**  
<http://www.hud.gov/offices/pih/programs/ph/phecc/pestmang.cfm>

## V. Addressing Infestations

The PHA should respond with urgency to any tenant report of bedbugs. Within 24 hours of the tenant report, the PHA should make contact with the tenant, provide the tenant with information about control and prevention of bedbugs and discuss measures the tenant may be able to take in the unit before the inspection is performed. However, a bedbug inspection and, if necessary, treatment, may take time to schedule. The PHA should endeavor to take appropriate action within a reasonable time period using the guidelines provided below.

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<sup>1</sup> An additional resource for interested parties is the *Bedbug Handbook*. L.J. Pinto, R. Cooper, and S.K. Kraft, *Bedbug Handbook: The Complete Guide to Bedbugs and Their Control* (Mechanicsville, MD: S.K. Pinto & Associates, 2007).

Following a report of bedbugs, the PHA or a qualified third party trained in bedbug detection should inspect the dwelling unit to determine if bedbugs are present. It is critical that inspections be conducted by trained staff or third party professionals. Low level inspections may escape visual detection. For this reason, multiple detection tools are recommended. Recent research indicates that “active” bedbug monitors containing attractants can be effective tools for detecting early infestations. Some licensed pest control applicators use canine detection to verify the presence of bedbugs. The inspection should cover the unit reporting the infestation and no less than surrounding apartments consisting of the units above, below, left and right, and should be completed within three business days of a tenant complaint if possible. If reputable, licensed pest control companies are unattainable within three calendar days, the PHA is required to retain documentation of the efforts to obtain qualified services. If an infestation is suspected but cannot be verified using the methods described above, the PHA should re-inspect the unit(s) periodically over the next several months.

When an infestation is identified, the unit and surrounding units should be treated for bedbugs according to the IPM Plan. Chemical treatments are necessary, but not reliable. Therefore, encasement, interception devices, vacuuming, steaming, freezing and commodity or building heat treatments may be utilized as part of the bedbug control effort. Infestations are rarely controlled in one visit. Effective treatment may require two to three visits, and possibly more. The length, method and extent of the treatment will depend on the severity and complexity of the infestation, and the level of cooperation of the residents.

## **VI. Additional Considerations**

PHAs may offer protective tools to residents to help safeguard properties from infestation and recurrences. For example, the PHA may offer residents bed covers, climb-up interceptors, or other detection or protection devices that may become available. PHAs may voluntarily offer to inspect tenants’ furniture before move-in. PHAs may also offer tenants a service of non-chemical treatment of household items upon tenant move-in, non-chemical treatment or inspection of used furniture and/or non-chemical treatment of luggage before it is unpacked when a tenant returns from a trip. Tenants may voluntarily use such services, but PHAs may not require tenants to do so. These services or products are to be offered at the PHAs expense.

A PHA may not deny tenancy to a potential resident on the basis of the tenant having experienced a prior bedbug infestation, nor may give residential preference to any tenant based on a response to a question regarding prior exposure to bedbugs. A PHA may not charge a tenant to cover the cost of bedbug treatment; such costs should be covered by the PHA. HUD reserves the right to approve Lease Addenda. Lease Addenda may not conflict with this Notice.

## **VII. Tenant Rights and Responsibilities**

Tenants are strongly encouraged to immediately report the suspicion of possible bedbugs in a housing unit or other areas of the property. Early reporting allows the pests to be identified and treated before the infestation spreads. Tenants are the first line of defense against bedbug infestations and should be encouraged to create living environments that deter bedbugs. This includes reducing unreasonable amounts of clutter that create hiding places for bedbugs, and regular checking of beds and laundering of linens.

Bedbug infestations can cause health concerns, including physical discomfort and may contribute to stress and anxiety on the part of the residents. Tenants should be advised of the following:

- A PHA may not deny tenancy to a potential resident on the basis of the tenant having experienced a prior bedbug infestation, nor may an owner give residential preference to any tenant based on a response to a question regarding prior exposure to bedbugs.
- A tenant reporting bedbugs may expect expeditious response and attention by the PHA, but should be advised that inspection and, if necessary, treatment of bedbugs may take time to schedule. The inspections should occur within three calendar days of the tenant report when possible.
- Following a report of bedbugs, the PHA or a qualified third party trained in bedbug detection should inspect the dwelling unit to determine if bedbugs are present. It is critical that inspections be conducted by trained staff or third party professionals. The PHA may enter the unit to perform these activities, in accordance with the lease.
- If bedbug infestation is found in the unit, the tenant may expect treatment to begin within five days of the inspection, though depending on the form of treatment, this may not be possible. Tenants should be advised that treatment may take several weeks.
- Tenants are expected to cooperate with the treatment efforts by allowing for heat treatment of clothing and furniture and refraining from placement of infested furniture or other items in common areas such as hallways. Tenant cooperation is shown to expedite the control of bedbugs and to prevent spreading of infestations.
- Management may make staff available to help with moving and cleaning of furniture to accomplish the treatment effort.
- The tenant will not be expected to contribute to the cost of the treatment effort.

- The tenant will not be reimbursed the cost of any additional expense to the household, such as purchase of new furniture, clothing or cleaning services.

### **VIII. REAC Inspections**

Bedbugs should be addressed when reported by staff, tenants or the Real Estate Assessment Center (REAC), regardless of the score of the REAC physical inspection. Inspectors ask the PHA to identify any units and/or buildings that are infested before the inspection begins. When bedbugs are reported or observed, the inspector will record the units and/or buildings affected in the comment section of the Physical Inspection report, noting that bedbugs were reported. The inspector will then select an alternate unit to inspect to replace any unit with observed or reported bedbugs.

REAC sends a “Bedbugs Reported” email to the local PIH field office with a copy to the PIH Regional director when bedbugs are noted in the comments section of a Physical Inspection Report. The PHA will see the information about bedbugs in the comment section of the Physical Inspection Report which provides PHAs with the necessary information to address the situation.

/s/

Sandra B. Henriquez, Assistant Secretary for  
Public and Indian Housing

Attachment



U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT  
WASHINGTON, DC 20410-8000

ASSISTANT SECRETARY FOR HOUSING-  
FEDERAL HOUSING COMMISSIONER

As Special Attention of

All Multifamily Hub Directors  
All Multifamily Program Center Directors  
All Multifamily Operations Officers  
All Directors of Project Management  
All Field Counsel

## Notice H 2012-5

Issued: April 23, 2012

Expires: This notice remains in effect until amended, revoked, or superseded

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Cross References: Housing Notice 2011-20

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SUBJECT: Guidelines on Addressing Infestations in HUD-insured and Assisted Multifamily Housing

### I. Purpose

This Notice supersedes Housing Notice 2011-20, “Guidelines on Bed Bug Control and Prevention in HUD Insured and Assisted Multifamily Housing.” Readers seeking guidance on the subject of bed bug infestations should instead refer to this Notice, which provides updated information to prevent and address infestations, including but not limited to bed bugs, insects, and all manner of vermin. HUD is providing guidance to Owners, Management Agents (O/As) and residents of HUD Multifamily insured and assisted properties to remind all parties of the importance of prevention, identification, and treatment of infestations in HUD-assisted and HUD-insured rental housing. The Department has received numerous inquiries and comments from the industry and HUD residents seeking clarification and information on appropriate steps to address infestations in Multifamily properties. This Notice provides information and references to best practices regarding the prevention and control of infestations. It also reaffirms existing program requirements with regard to infestations.

### II. Background

Pursuant to 24 CFR Part 5, Subpart G, HUD housing must be decent, safe, sanitary and in good repair. Owners of HUD-insured or assisted housing must maintain such housing in a manner that meets physical condition standards. In accordance with project Regulatory Agreements and Section 8 HAP Contracts, the housing must have no evidence of infestation. HUD monitors Owners and Agents (O/As) to ensure that housing meets physical condition standards enumerated in 24 CFR 5.703. This includes providing guidance aimed at preventing and addressing infestations.

Many residents and O/As have contacted HUD to seek guidance on infestations. Of particular concern is the growing problem of bed bugs. According to the United States Environmental Protection Agency (EPA), bed bug populations have recently increased dramatically. HUD is working closely with other federal agencies to develop and share best practices for preventing, identifying and controlling bed bugs.

### III. Applicability

This Notice provides guidance to the following types of projects:

- A. Properties assisted with Section 8 Project Based Rental Assistance, Rent Supplement or Rental Assistance Payment (RAP) contracts.
- B. Properties with active Section 202 Direct Loans, Section 202/162, Section 202 and 811 Capital Advances, and Section 202 Senior Preservation Rental Assistance Contracts or Section 811 Project Rental Assistance demonstration funding.
- C. Properties with active FHA insured first mortgages under Sections 207 pursuant to 223(f), 221(d)(3), 221(d)(4), 221(d)(5), 231, 213 or 236.

Certain provisions of this Notice are applicable only to assisted properties, as specified in various sections of the Notice below. The Notice does not supersede existing lease provisions that comply with state and/or local landlord/tenant laws and that have been approved by HUD (where such approval is required).<sup>1</sup> All parties should refer to the property lease executed between the tenant and the O/A, and the property House Rules, for details on Owner and resident rights and responsibilities related to infestations and housing physical condition standards. Certain assisted properties<sup>2</sup> are also subject to provisions of the HUD Model Lease for Subsidized Programs (Family Model Lease) (Form HUD-90105-A, HUD-90105-B, HUD 90105-C and HUD-90105-D) in HUD Handbook 4350.3, *Occupancy Requirements of Subsidized Multifamily Housing Programs*.

### IV. Prevention of Bed Bug Infestations

Of particular concern for Multifamily O/As, as well as project residents, is the resurgence of bed bugs, which can cause discomfort and anxiety for residents and which can spread quickly. The ideal approach to bed bug infestations is to prevent them from occurring in the first place. Federal agencies, such as EPA and HUD, are working in tandem to develop and share recommendations to prevent infestations.

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<sup>1</sup> For unassisted O/As, this Notice does not supersede state and local landlord/tenant law related to lease enforcement, housing habitability, and cure rights or damages.

<sup>2</sup> Section 221(d)(3) BMIR, Section 236, Section 8 New Construction, Section 8 Substantial Rehabilitation, Section 8 State Agency, RHS 515 with Section 8, Section 8 Loan Management Set-Aside (LMSA), Section 8 Property Disposition Set-Aside (PDSA), Rental Assistant Payment (RAP), and Rent Supplement projects are subject to the provisions of the Family Model Lease.

HUD encourages Multifamily O/As to develop an Integrated Pest Management Plan (IPM) to focus on preventing infestations. Such plans describe the ongoing efforts the property management will take to prevent and respond to pests. For more detail on IPMs generally, please see the online guide at <http://www.stoppests.org>. The information below pertains specifically to bed bug infestations.

According to the EPA, principles of IPM for bed bugs include:

- Raising awareness through education on prevention of bed bugs;
- Inspecting infested areas, plus surrounding living spaces;
- Checking for infestations on luggage and clothes when returning home from a trip;
- Reducing the number of secondhand items brought into units and looking for bed bugs or signs of infestation on secondhand items before bringing the items home;
- Correctly identifying the pest;
- Keeping records – including dates when and locations where pests are found;
- Cleaning all items within a bed bug infested living area;
- Reducing clutter where bed bugs can hide;
- Eliminating bed bug habitats;
- Physically removing bed bugs through cleaning;
- Using pesticides carefully according to the label directions; and,
- Following up on inspections and possible treatments.

In addition to or as part of an IPM program, Multifamily O/As are strongly encouraged to take the following steps to prevent bed bugs:

- Provide training for staff to identify bed bugs, and to perform ongoing prevention actions as outlined in the IPM. When a community is at high risk for bed bugs (for example, if the community has experienced prior infestations), periodic building inspections are recommended.
- Actively engage residents in efforts to prevent bed bugs. Education and involvement of project residents is a critical component of IPM for bed bugs. Bed bugs may often go undetected and unreported, because they are active at night, and tenants may not be aware of their presence. O/As may wish to hold workshops for tenants to teach them to identify bed bugs, to create unfriendly environments for pests, and to report suspicions of bed bugs as soon as possible.
- Provide orientation for new tenants and staff, and post signs and handouts.

In addition, tenants should immediately report the suspicion of infestations in housing units or other areas of the property. Early reporting allows the pests to be identified and treated before the infestation spreads. Tenants are the first line of defense against infestations and should cooperate to create living environments that deter pests. This includes reducing unreasonable amounts of clutter that create hiding places for pests and deter treatment.

More information on bed bug prevention may be found by accessing the following websites:<sup>3</sup>

- **Healthy Homes Training:** *What's Working for Bed Bug Control in Multifamily Housing?: Reconciling best practices with research and the realities of implementation.* [http://www.healthyhomestraining.org/ipm/NCHH\\_Bed\\_Bug\\_Control\\_2-12-10.pdf](http://www.healthyhomestraining.org/ipm/NCHH_Bed_Bug_Control_2-12-10.pdf).
- **National Pest Management Association Bed Bug Hub:** <http://pestworld.org/pest-world-blog/the-bed-bug-hub-one-stop-shop-for-bed-bug-information>
- **National Pest Management Association Best Practices Website:** <http://www.bedbugbmps.org>
- **IPM Curriculum and Blog:** <http://www.stoppests.org>
- **Environmental Protection Agency:** <http://www.epa.gov/pesticides/bedbugs/>

## V. Addressing Infestations

The O/A should respond with urgency to tenant reports of infestations. The O/A should endeavor to take appropriate action within a reasonable time period. However, tenants are advised that pest inspections and, if necessary, treatment, may take time to schedule, particularly for recently resurgent pests such as bed bugs, for which it may be difficult to find trained specialists to perform inspections and conduct treatments.

Residents should fully cooperate with the O/A's efforts to identify and address infestations. This tenant cooperation is shown to expedite the control of infestations. Cooperation includes allowing the O/A to enter the unit to perform inspections and treatments, allowing pest treatments to occur, following the pest treatment protocol, and removing infested furniture or other items from common areas such as hallways or community rooms.

Residents are advised that some infestations, including bed bugs, require multiple treatments over the course of several weeks. Generally, relocation from units is not necessary for effective pest treatment. However, if reasonable temporary relocation is necessary, the O/A may request withdrawals from available project funds (which may include Reserve for Replacement, project income, or Residual Receipts, if authorized by HUD), as described below in Section VI, for those days when treatment is actively occurring that may render the unit uninhabitable. All withdrawals of this type must be approved by the Hub/PC Director or designee. Any temporary relocation must be carried out in accordance with applicable civil rights laws, including, but not limited to, Title VI

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<sup>3</sup> An additional resource for interested parties is the *Bed Bug Handbook*. L.J. Pinto, R. Cooper, and S.K. Kraft, *Bed Bug Handbook: The Complete Guide to Bed Bugs and Their Control* (Mechanicsville, MD: S.K. Pinto & Associates, 2007).



of the Civil Right Act of 1964 and Section 504 of the Rehabilitation Act of 1973. For example, when persons with disabilities are temporarily relocated, they must be placed in housing that provides, at a minimum, the same accessibility features as the housing in which they currently reside. Additionally, the O/A must ensure the right of return for tenants who have had to be temporarily relocated while the treatment is being performed.

## VI. Project Resources

An O/A may contact HUD to request project resources for control of infestations. An O/A may use available operating funds to pay for activities to prevent and/or treat infestations. When other sources of funds are not available or sufficient, the Hub/PC Director may honor requests to reimburse Owners for infestation treatment from the Reserve for Replacement account, or, if authorized, the Residual Receipts account. The releases should follow the processes outlined in HUD Handbook 4350.1, *Multifamily Project Servicing*, Chapters 4 and 25. Owners may make advances (loan without interest) when no reserves are available. With prior HUD approval, Owners may repay the advances from project resources as discussed in HUD Handbook 4350.1.

For assisted housing projects, HUD may consider use of rental assistance to pay reasonable and necessary project expenses, such as an increased pest control line item in the project's operating budget, if the Section 8 Housing Assistance Payments (HAP) contract allows for budget-based rent setting in accordance with the *Section 8 Renewal Policy Guide*.

Owners of assisted properties are advised that any rental assistance received under Section 8, Rent Supplement or RAP cannot be used to reimburse residents for the cost of any additional expense to the household, such as purchase of new furniture, clothing or cleaning services. Assisted project Owners' requests for tenants to pay the costs of infestation treatment must be in accordance with the provision for tenant payment of damages or noncompliance as required in the Family Model Lease.

## VII. Recurring Infestations

Many properties face recurring infestations. O/As may take initiative to offer protective tools to residents to help safeguard properties from recurrences. To prevent pests from entering a Multifamily property, O/As may voluntarily offer to inspect tenants' furniture before move-in. Where there is an approved (for Assisted Owners) lease provision that complies with state and/or local landlord/tenant law, O/As may require appropriate treatment of furniture upon tenant move-in, or when a tenant moves furniture into the apartment. These services or products are to be offered at the Owner's expense, or may be paid from project operating funds if available.

All Owners (of assisted and unassisted properties) may pursue remedies provided in the lease agreement and in accordance with state and local rental law. Assisted Owners must follow additional guidelines including occupancy requirements for assisted housing, and must adhere to all HUD and state and local landlord/tenant laws before taking action to deny tenancy or remove residents for causes related to infestations. For O/As of assisted properties, the Family Model Lease provides remedies related to damages or noncompliance. Many O/As have proposed lease addenda

related to infestations. As detailed in HUD Handbook 4350.3, Section 6-9, Lease Addenda in assisted properties may not conflict with the Family Model Lease. HUD reserves the right to review and approve Lease Addenda for assisted properties, for example to ensure that tenant payment provisions in proposed Addenda do not exceed the remedies for damages or noncompliance provided in the Family Model Lease.

### **VIII. Responding to Inspection Findings**

Infestations should be addressed when reported by staff, tenants or the Real Estate Assessment Center (REAC), or if an audit by the HUD Office of the Inspector General identifies possible infestation.

Presently, REAC inspectors will only deduct points if there is the presence of rats, or severe infestation by mice or insects such as roaches or termites. The following deficiencies can be noted: 1) Insects and 2) Rats/Mice/Vermin.”<sup>4</sup> If there is no evidence of infestation (i.e. there are baits, traps, and sticky boards with no presence of insects or vermin) inspectors are instructed not to record this as a deficiency. If evidence is identified, the infestation may be cited as a deficiency.

As per Inspector Notice No. 2010-01, “the presence and/or treatment of bed bugs will not be scored in the UPCS inspection.” However, inspectors now ask the O/A to identify any units and/or buildings that are infested before the inspection begins. If bed bugs are reported, the inspector will record the units and/or buildings affected in the comment section of the Physical Inspection report.

Because bed bug infestations are on the rise, HUD staff will take additional steps to monitor and track reports of bed bug infestation and treatments of such infestations. When bed bugs are reported by the Owner/Agent at the time of inspection or if the Inspector notes the presence of bed bugs, REAC sends a “Bed Bugs Reported” email to the Hub/Program Center Director. HUD staff must take the following steps upon receipt of the “Bed Bugs Reported” email from REAC (regardless of the PASS score the property receives) or if bed bugs are cited as a deficiency within the REAC report, or if bed bugs are reported by the O/A, project residents, the Performance Based Contract Administrator, or an OIG audit:

- Enter the bed bug information on the Problem Statement screen in the Integrated Real Estate Management System (iREMS).
- If bed bugs were identified by REAC, send the attached letter (Attachment 1) to the Owner regardless of the score of the REAC Physical Inspection.
- Advise the Owner to describe what actions were taken or will be taken to eradicate the infestation.
- Advise the Owner to inform HUD of the response to the infestation, and to inform HUD if and when the problem has been completely eradicated.

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<sup>4</sup> HUD Physical Inspection Program—Chapter 3: UPCS Definitions Training—Health & Safety

- Release funds from Reserve for Replacement or Residual Receipts accounts if requested and if such funds are available and authorized.
- Continue to enter all related information into the Problem Statement screen in iREMS; and,
- Report any significant developments or problems regarding a bed bug infestation to Headquarters, Office of Asset Management.

If you have questions, please contact your Desk Officer in the Office of Asset Management.

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Carol J. Galante  
Acting Assistant Secretary for Housing –  
Federal Housing Commissioner

Enclosures

ATTACHMENT

Property Owner  
Address

SUBJECT: Bed Bugs  
Property Name: \_\_\_\_\_

Dear Owner:

The [Hub Name] Multifamily Hub has received notification from the Real Estate Assessment Center (REAC) that during the physical inspection of your property performed on [Date], the inspector indicated that bed bugs were reported present at the property. The units/buildings below were identified as being infested with bed bugs:

Within 5 days of the date of this letter, please inform your Project Manager of the actions you are taking for bed bug control. This information should include the method of treatment used (or to be used), the timing for treatment(s), and your proposed plan for monitoring and preventing the possibility of future infestation.

If you have any questions, please contact your Project Manager, [Project Manager's Name], at [Project Manager's Telephone Number] ext. [Extension]

Sincerely,

\_\_\_\_\_  
Supervisory Project Manager  
Project Management Division

## APPENDIX D—IPM FOCUS UNIT TRACKING LOG

Name/Address of Property: \_\_\_\_\_

*The IPM team identifies areas or units of focus and coordinates IPM efforts. This sheet unites pest control, housing, and maintenance record-keeping systems. Keep it in the front of the IPM log.*

Date	Unit / Location	Name of Staff Member / Technician	Pest Level	Repairs Needed		Recent or Current Focus Unit?	Housekeeping / Lease Compliance	
				Work order number or problem description	Check when completed		Housekeeping level* (circle one)	Action taken (e.g., met with tenant, sent violation notice)
			Note any pests and circle the level of infestation. Involve your PMP.  Type of Pest: Light Moderate Heavy			Yes or No	G F P	
			Type of Pest: Light Moderate Heavy				G F P	
			Type of Pest: Light Moderate Heavy				G F P	
			Type of Pest: Light Moderate Heavy				G F P	

**\* Housekeeping level:**

**G** Good—little or no food or water accessible to pests, easy to move throughout the unit, and inspection in all areas is possible

**F** Fair—dishes left undone for more than one day, or plenty of food or water accessible to pests, or PMP has to step over or move items to inspect

**P** Poor—multiple days of dirty dishes, sloppy food storage methods, or PMP’s inspection and service is limited by clutter

Download additional copies of this log at: [www.stoppests.org/file/IPM-Log-Example](http://www.stoppests.org/file/IPM-Log-Example)



## APPENDIX E—SAMPLE REQUEST FOR PROPOSAL (RFP) AND SCOPE OF WORK FOR PEST CONTROL<sup>4</sup>

### A. Sample Request for Proposal

Firms interested in responding to this Request for Proposal (RFP) must submit the following information, in the order specified below.

#### 1. Introduction and Executive Summary (up to 1 page)

Submit a letter of introduction and executive summary of the proposal. The letter must be signed by a person authorized by your firm to obligate your firm to perform the commitments contained in the proposal. Submission of the letter will constitute a representation by your firm that your firm is willing and able to perform the commitments contained in the proposal.

#### 2. Service Approach (up to 12 pages including Sample IPM Plan)

- A. **Examples of IPM Approach:** Describe three examples from multifamily housing where your firm has creatively applied the IPM approach to solve difficult pest problems. Provide project summary, budget information if appropriate, and contact information for references at the facility involved (see below).
- B. **Record-Keeping and Reporting Capability:** The firm shall describe how it intends to meet the record-keeping and reporting requirements in a way that property staff will be able to read and use to track trends. Include sample forms.
- C. **Mandatory Site Visit and Initial Inspection Report:** Proposers must attend the mandatory site visit and submit a set of Sample IPM Plan documents based on the visit.

The mandatory site visit will be held at:

LOCATION:

TIME:

Based on this visit, the contractor shall submit an initial site inspection report. The following specific points should be addressed in the report:

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<sup>4</sup> Adapted from:

- EcoWise Contracting Tool Kit: [www.ecowisecertified.org/toolkit/](http://www.ecowisecertified.org/toolkit/)
- GreenPro Standards:  
[www.npmagreenpro.org/download2.asp?FileName=GPC\\_Standards.pdf](http://www.npmagreenpro.org/download2.asp?FileName=GPC_Standards.pdf)
- City and County of San Francisco's RFP for Integrated Pest Management Service for City Owned Buildings and Properties (RFP 83518, 2007)
- Multiple pest control RFPs from housing authorities across the U.S.

- Discussions of effectiveness of previous efforts;
  - Identification of problem areas in and around the building (locations and extents of infestations, observed damage to structure or commodities, conditions conducive to infestation, harborage areas, sanitation deficiencies, avenues of potential entry);
  - Contractor access system and coordination to all necessary areas;
  - Information given to the contractor during the inspection about any restrictions or special safety precautions; and
  - Any other items or factors that would impact the development of a pest management program.
- D. **Emergency and Special Services Capability:** The firm shall describe its plan for meeting the emergency and special service requests described in the scope of work (for example, availability of trucks and personnel).
- E. **Public Health Vector Control Capability:** The firm shall describe all relevant experience with control of mosquitoes and other disease vectoring organisms of public health interest.
- F. **A Sample IPM Plan:** See the Scope of Work for details.

### *3. Firm Qualifications (up to 3 pages)*

Provide the following:

- A. **Name, address, and telephone** number of a primary contact person.
- B. **A brief description of your firm**, certifications held, professional organization affiliations, as well as how any joint venture association would be structured.
- C. **Address(es) and location(s) of local offices** and service headquarters that would be involved in servicing the PHA contract.
- D. **Description of microscopes**, pest detection equipment or other equipment possessed by the firm that would be used for performance of the contract.
- E. **Names of all staff**, supervisors, and subcontractors who would work on the contract. The firm must have sufficient licensed employees to cover the property's needs. Provide
- The role each staff member and subcontractor would play in the project (onsite service technician, onsite supervisor, manager, owner, etc.).
  - Experience, education, and qualifications of each staff member, including licenses and certifications held, verification that license(s) are valid, and other relevant training or skills. Contractor shall have access to an Associate Certified Entomologist (ACE) or Board Certified Entomologist (BCE) or person holding a degree in entomology who has demonstrated expertise in structural pest control, especially for rodents, bed bugs, and cockroaches.
  - Written assurance that the staff members listed above will be performing the work and will not be substituted with other personnel or reassigned to another project without prior approval. Assurance must also be made that any substitute personnel be fully qualified.



- F. **Certifications:** The contractor shall provide the following:
- Certificate of Contractor General Liability Insurance, with the contracting party named as an additional insured
  - Certificate of Workers' Compensation Insurance
  - A copy of the pesticide applicators' license(s)
  - Listing of any violations of state pesticide regulations or pest management regulations within the past three years.
  - Description of in-house training program for firm employees.
  - Description of in-house health & safety program.
- G. **Commitments:** The contractor must commit to providing qualified, professional pest management personnel who:
- Will not distribute or sell pesticide products to residents or staff;
  - Will not store any pesticide product in the buildings specified in this contract;
  - Understand current practices in this field and have experience providing pest control services in a residential environment;
  - Conduct themselves in a professional manner, with minimal noise and disruption;
  - Cooperate with the building occupants to assure the progress of this work;
  - Have good communication skills and will speak with residents who are present during a visit. It is expected that the PMPs will make an effort to obtain pest sighting information from residents and educate them on IPM techniques;
  - Maintain certification as a Commercial Pesticide Applicators in the category of residential and institutional pest control services;
  - Wear a distinctive uniform that has the contractor's name easily identifiable, affixed in a permanent or semi-permanent manner while working at PHA-owned or leased properties;
  - Use additional personal protective equipment required for safe performance of work as determined and provided by the contractor that, at a minimum, conform to Occupational Safety and Health Administration (OSHA) standards for products being used;
  - Use only contractor vehicles identified in accordance with state and local regulations;
  - Observe all safety precautions throughout the performance of this contract. Certain areas within some buildings may require special instructions for persons entering these areas;
  - Will comply with all government regulations as are applicable during the time spent on government property;
  - Obtain building passes, if needed, as supplied by the PHA or appropriate building manager; and
  - Take all necessary precautions to ensure tenant and employee safety, and all necessary steps to ensure the containment of the pesticide to the site of application.

#### *4. References (1 page)*

The Contractor must submit a list of at least four (4) verifiable references (including names, titles, affiliations, and telephone numbers) for work comparable to that discussed in these specifications that has been completed during the past three (3) years or is currently in progress.

#### *5. Price Proposal (1 page per section)*

The PHA intends to award this contract to the firm that it considers will provide the best overall program services. The PHA reserves the right to accept other than the lowest bid and to reject any proposals that are not responsive to this request. Please provide a price proposal in a sealed envelope that includes hourly rates for the services described in the Scope of Work. These rates will be used either to charge for services on a time and materials basis, or as base rates for negotiating flat monthly fees with individual facility managers.

- Focus Units
- Unit Turnover Service
- Routine Inspection
- Call-Back Service: No Charge
- Emergency Services
- Special Services
- Training/Consultation

## **B. Scope of Work**

1. **Monitoring.** Begin with a property-wide inspection and monitoring, using both monitoring devices and visual inspection.
2. **IPM Plan.** Use the monitoring results to design an IPM plan for the property. This plan will be updated at least annually along with monitoring results. The following components should be included in all written IPM plans:
  - A. **Management objectives:** Identify key pests to be controlled, level of control desired (thresholds), and areas of the facility requiring special attention. Include a clear understanding of all guarantees, exclusions, and limitations, including the definitions of high-, medium-, and low infestations. Proposal must adhere to HUD's Guidance on IPM (PIH Notice 2011-22).
  - B. **Communication and accountability system:** Designate contact people and alternates at both the facility and the contractor's company. Establish a location for the pest activity log book(s) at the facility. Set up a procedure for the contractor to report maintenance or pest prevention needs to appropriate staff at the facility.
  - C. **Schedule of service:** Describe the expected schedule and duration of service visits required to meet management objectives. Except as otherwise agreed

upon, all work at properties under this contract should be performed between 9:00 a.m. and 4:00 p.m., Monday through Friday, and should not interfere with daily PHA operations.

D. **Monitoring program:** The contractor should describe methods and procedures to be used for a) identifying sites of pest harborage and access; and b) assessing pest populations throughout the term of the contract. This information must include general locations of common area monitoring traps and responsibilities for routinely checking the traps. Differences in pest pressures associated with seasons and preventative action should be addressed. As a general rule, pesticides should not be applied unless monitoring indicates the presence of pests in that specific area.

E. **Description of IPM methods and products:**

- Summarize nonchemical IPM methods proposed and choose pest management strategies that are:
  - Least disruptive of natural controls;
  - Least hazardous to human health;
  - Least toxic to nontarget organisms;
  - Least damaging to the environment;
  - Most likely to produce a permanent reduction of the pest population;
  - Easiest to carry out effectively; and
  - Most cost-effective over the short and long-term.
- Do not apply pesticides inside or outside unless visual inspection or a monitoring device indicates the presence of pests in that specific area;
- Control rodents inside buildings only with trapping devices. All such devices shall be concealed from view, being placed in protected areas unaffected by routine cleaning and other operations. Check trapping devices on a schedule approved by the Contract Manager. The Contractor is responsible for disposing of all trapped rodents and all rodent carcasses in an appropriate manner;
- Use portable vacuums rather than pesticide sprays for initial cleanouts of cockroach infestations, for swarming (winged) ants and termites, and for control of spiders in webs;
- Bait formulations shall be the standard pesticide technology for cockroach and ant control, with alternate formulations restricted to unique situations where baits are not practical; and
- The Contractor shall apply all insecticides as “crack and crevice” treatments only, defined in this contract as treatments in which the formulated insecticide is not visible to a bystander during or after the application process.
- List EPA-approved pesticide products proposed for use in the program together with the rationale, proposed methods of use, and methods planned to minimize exposure. For each pesticide, list the product name, EPA

registration number, pests targeted, and where pesticide will be applied (e.g., indoors, in wall voids, or outside).

- F. **Desirable structural or operational changes:** Identify pest-proofing activities or modification of staff operational methods or timing that would improve pest management efforts (e.g., caulking around pipes).
  - G. **Record-keeping system:** Describe data to be collected and provide a sample monitoring form designed to track data on pest location, populations, harborage, trends in pest populations, status of previously suggested pest exclusion and prevention measures for which facility staff are responsible, and other relevant information. See “Log Book” below.
  - H. **Education and training activities:** List recommended education and training activities for facility staff that would increase their support for IPM activities.
3. **Service Units.** Treatments should be scaled to the type and level of infestation and priced accordingly.
- A. **Focus units:** Units that are infested (henceforth referred to as Focus Units) shall be serviced at least monthly until the infestation is gone. Once pest-free, the focus unit will be removed from the monthly service list and inspected routinely.
  - B. **Unit turnover service:** Conduct intensive inspection and necessary treatment as requested by the PHA when units are prepared for occupancy. Typically these units will be existing units changing residents. They may also be new units added to the scope of the contract. A unit is treated at unit turnover only if evidence of pest infestation is found.
  - C. **Routine inspection:** Conduct regularly scheduled inspections for pests, set out or collect monitoring traps, and treat units for pests as needed. Sticky trap monitors shall be placed in all common areas and checked/replaced at each routine service. Schedule routine inspections so that the Contractor visits each unit twice a year, using the same PMPs when possible.
  - D. **Call-back service:** Conduct follow-up inspection in response to resident or staff complaints. Routine call-back service shall be furnished within one (1) workday after receipt of notification by the PHA. Call-back service required by the PHA due to contractor negligence will be at no charge.
  - E. **Emergency services** are directed at urgent pest problems that must be addressed as soon as is practical. They are not “call backs” resulting from other routine services provided under the contract. Except for holidays or other “shut down” periods, the Contractor is expected to address emergency problems within 24 hours of the service call. The Contractor may charge the “emergency rate” for these services but must notify the requesting department that the emergency rate applies before performing the service. In the event that such services cannot be completed within the above-stipulated time frame, the Contractor shall immediately notify the PHA representative and indicate an anticipated completion date.

- F. **Special services** are those that require special skills, training, or licensing, and may utilize subcontractors for whose work the Contractor shall be accountable. The contractor should list pests or situations for which a subcontractor will be hired.
- G. Regardless of service type, at each visit, the PMP must complete and leave a service ticket detailing what was found and done in each unit and area. When needed or appropriate, the Contractor shall also provide detailed, site-specific recommendations for structural and procedural modifications to aid in pest prevention.
- H. The Contractor shall provide additional consultation, training, and technical support, by phone or in person during business hours (8:00 a.m.–5:00 p.m.). The Contractor must provide, free of charge, up to eight (8) hours of his/her time per calendar year.

### **C. Log Book**

The Contractor shall be responsible for maintaining a complete and accurate Pest Management Log Book at each facility that is served under the contract. The Log Book shall be updated at each visit by the Contractor. If the facility lacks a log book, the Contractor is responsible for providing one.

The Log Book shall contain at minimum the following items:

- A copy of the IPM plan and/or service schedule for the building.
- A copy of each license, certification, or proof of insurance required.
- A list of pesticides used, including copies of sample labels and material safety data sheets (MSDS). All pest control products must be registered by the U.S. EPA for residential use and must be applied according to the manufacturer's label instructions and in compliance with all applicable local, state and federal laws and regulations.
- A pest sighting log where new work orders and a Focus Unit list is updated.
- The location of all traps and bait stations on the premises, preferably in map format.
- Copies of all service report forms for the facility.
- Sample educational materials for residents (with translations)

### **D. Reporting and Recordkeeping**

As part of the services provided under this contract, the collection and transmittal of data collected by the contractor during the work is crucial to the effectiveness in managing the IPM. The Contractor must propose reporting and recordkeeping plans to enable the PHA to monitor Contractor's work in a timely and efficient manner. The reporting and recordkeeping forms will be kept in the building's IPM Log. At a minimum, Contractor is

required to collect and submit the reports detailed below. The PHA will review and approve the report format prior to finalizing a contract.

- **Notification of Upcoming Service (at least one week before scheduled visit):** The Contractor shall provide Pesticide Use Notification signs and preparation instructions for the PHA to post at least one week in advance of routine inspection. The notifications will include a translation if the building residents do not speak English.
- **Notification of Pesticide Use (at time of treatment):** If an infestation is found that requires pesticides, a form is left at the treatment location detailing what product was used, where, any precautions that can be taken to reduce risk of exposure, and nonchemical control techniques that can be used to prevent further infestation.
- **Inspection/Sanitation Report (service tickets):** Upon completion of each routine inspection at the property, the Contractor must submit a summary highlighting troubled areas or units. The Contractor must submit the report in hard-copy format. The hard copy must be signed by the building manager and kept in the IPM Log. An individual Unit Service Ticket must be completed for each unit in which pesticides were applied.
- **Quality Control Summary (bi-annually):** A report on the quality control program in place that quantitatively and qualitatively measures the successes and failures of the program. A report on the findings of quality control shall include recommendations for improvement including, but not be limited to the following:
  - Brief narrative discussing the findings as they relate to an increase or new infestations by unit or apartment number, including recommendation for treatment or preventative measures; and
  - Discussion of any findings of deficiencies due to lack of access, inadequate or improper treatments, or recommendations of change to a more effective chemical.
- **Updates to IPM Plan:** Contractor shall receive the concurrence of the PHA prior to implementing any subsequent changes to the approved IPM Plan, including additional or replacement pesticides and on-site service personnel. Contractor shall continue to provide licenses for every contractor employee who will be performing on-site services before the employee begins work on the PHA's property. Any substitutions, additions, or replacement of personnel from those cited in the contractor's original proposal must be submitted to the PHA for approval.

## **E. Selection Criteria (600 points possible)**

Proposals passing the minimum requirements above will be evaluated by a selection committee that includes parties with expertise in IPM.

### **A. Submission Requirements (10 points)**

- Organization of the document (3 points).

## Appendix E: Sample Request for Proposal (RFP) and Scope of Work for Pest Control

- Complete and accurate information (4 points).
  - Follow RFP instructions (3 points).
- B. Contractor's Licenses and Certifications (70 points)**
- Breadth and level of licenses and certifications held by Contractor's assigned project staff and subcontractors, above and beyond the minimum requirements set by the state (10 points).
  - Firms that offer GreenPro, GreenShield, or EcoWise service will automatically receive 30 points (30 points).
  - Firm includes at least one onsite staff member with valid certifications for public health pest control (20 pts)
  - Firm includes at least one onsite staff member with valid license for animal trapping (10 pts)
- C. Experience of Contractor and Contractor's Assigned Project Staff (50 points)**
- Quality of performance on recent contracts, including number of violations (30 points).
  - Extent of experience with vector control projects (10 points).
  - Quality and extent of in-house IPM training program (5 points).
  - Quality and extent of in-house health & safety program (5 points).
- D. Service Approach (170 points)**
- Creativity and thoroughness in seeking less-toxic pest management approaches (40 points).
  - Emergency and special services capability (5 points).
  - Completeness of data reporting capabilities, and abilities to integrate with the PHAs work order system (10 points).
  - Proximity of Contractor's business to service areas (5 points).
  - Adequacy of Contractor's facilities, including the availability of microscopes and other pest identification tools (5 points).
  - Site-Specific Sample IPM Plan (95 points)
    - Ability of Contractor to recognize pest problems and sources of problems (30 points).
    - Thoroughness of recommendations for pest prevention (30 points).
    - Quality of recommendations for most affordable and feasible chemical or nonchemical controls (25 points).
    - Justification for all actions proposed (10 points).
      - Quality and completeness of monitoring forms (5 points).
      - Quality and completeness of service report form (5 points).
- E. References (100 points)**
- Quality of recently completed projects, including effectiveness, adherence to IPM principles, adherence to schedules and budgets, and references (100 points).
- F. Oral Interview (100 points)** Interviews conducted for up to three highest scoring proposals

## Integrated Pest Management: A Guide for Affordable Housing

- Contractor's working knowledge of the biology and behavior of problem pests (15 points).
- Contractor's working knowledge of the use of least toxic approaches to pest management (20 points).
- Extent of Contractor's experience using nonchemical and reduced-risk chemical pest control methods (15 points).
- Contractor's working knowledge of pesticide hazards, including toxicity, human exposure potential, and potential environment effects of pesticides (10 points).
- Knowledge of the specialized pest management concerns typically faced by PHAs (25 points).
- Quality of proposed communication approach between pest management personnel and PHA staff (15 points).

G. **Fee Proposal** (100 points): Points will be awarded *for each service type* proportionally based on the formula below. Points for each service type will then be added together for a possible 100 points total.

*Formula for calculating Point Score:*

Points for proposer "A" for each service type =  
Possible points for service × (lowest qualified price proposal for service ÷ proposer "A's" price proposal for service)

*Example:*

Firm A's price proposal for Emergency Services: \$100/hour

Lowest qualified price proposal for Emergency Services: \$50/hour

3 (possible points) × (\$50/\$100) = 1.5 points

Total points for proposer "A" =

Focus Unit Service Points + Unit Turnover Service Points + Routine Inspection Points  
+ Emergency Service Points + Special Service Points + Training & Consultation Points

The possible points for the various services are as follows:

<u>Service Type</u>	<u>Possible Points</u>
Focus Unit Services	30
Unit Turnover Service	20
Routine Inspection	30
Emergency Services	3
Special Services	15
Training & Consultation	2



### F. Evaluation Worksheet

EVALUATION WORKSHEET—FOR COMPLETION BY REVIEWERS (See Evaluation & Selection Criteria for Reference)		[TEMPLATE]
Proposer #: _____		
Contractor Name: _____		Reviewer: _____
MINIMUM REQUIREMENTS		
	Item	Check
	1. Registered structural pest control company .....	<input type="checkbox"/>
	2. One onsite supervisor with Operator’s License .....	<input type="checkbox"/>
	3. All onsite staff have Applicator certification .....	<input type="checkbox"/>
	4. 5 years minimum experience .....	<input type="checkbox"/>
	5. Four (4) verifiable references provided .....	<input type="checkbox"/>
	6. All onsite supervisors have licenses .....	<input type="checkbox"/>
<b>Minimum Requirements Met? (If ‘No’, Stop Here)</b>		<input type="checkbox"/> Yes <input type="checkbox"/> No
SELECTION CRITERIA		
	Item	Points
	<b>1. Submission Requirements (10 points)</b>	
	a) Organization of the document ..... (3 pts)	_____
	b) Complete and accurate information ..... (4 pts)	_____
	c) Follow RFP instructions ..... (3 pts)	_____
	<b>2. Licenses and Certification (70 points)</b>	
	a) Breadth and level of licenses and certifications held ..... (10 pts)	_____
	b) GreenPro, EcoWise or GreenShield Certified IPM Services ..... (30 pts)	_____
	c) Firm includes at least one onsite staff member with valid certifications for public health pest control ..... (20 pts)	_____
	d) Firm includes at least one onsite staff member with valid license for animal trapping ..... (10 pts)	_____
	<b>3. Experience (50 points)</b>	
	a) Performance on recent contracts ..... (30 pts)	_____
	b) Experience with vector control ..... (10 pts)	_____
	c) Quality and extent of in-house IPM training program ..... (5 pts)	_____
	d) Quality and extent of in-house health & safety program ..... (5 pts)	_____

	Item (cont'd)	Points
	<p><b>4. Service Approach (170 points)</b></p> <ul style="list-style-type: none"> <li>a) Least toxic approach—or certified through GreenPro, GreenShield, or EcoWise: automatic 40 pts ..... (40 pts)</li> <li>b) Emergency and special services capability ..... (5 pts)</li> <li>c) Data reporting capabilities ..... (10 pts)</li> <li>d) Proximity of Contractor’s business to service areas ..... (5 pts)</li> <li>e) Adequacy of facilities, availability of microscopes, etc. .... (5 pts)</li> <li>f) Ability to recognize pest problems (sample IPM plan) ..... (30 pts)</li> <li>g) Thoroughness of recommendations for pest prevention (sample IPM plan and initial inspection report) ..... (30 pts)</li> <li>h) Quality of recommendations for most affordable and feasible chemical or non-chemical controls (sample IPM plan) ..... (25 pts)</li> <li>i) Justification for all actions proposed (sample IPM plan) ..... (10 pts)</li> <li>j) Quality and completeness of monitoring forms ..... (5 pts)</li> <li>k) Quality and completeness of service report form ..... (5 pts)</li> </ul>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
	<p><b>5. References (100 points)</b>                      Quality of recently completed projects, including effectiveness, adherence to IPM principles, adherence to schedules and budgets, and references (100 points).</p>	<p>_____</p>
	<p><b>6. Oral Interview (100 points)</b>  <i>Interviews conducted for up to three highest scoring proposals</i></p> <ul style="list-style-type: none"> <li>a) Knowledge of the biology and pest behavior ..... (15 pts)</li> <li>b) Knowledge of least toxic pest management approaches ..... (20 pts)</li> <li>c) Experience using reduced-risk chemical methods ..... (15 pts)</li> <li>d) Knowledge of pesticide hazards ..... (10 pts)</li> <li>e) Knowledge of the specialized pest management concerns typically faced by local government agencies ..... (25 pts)</li> <li>f) Quality of proposed communication approach between Contractor’s personnel and PHA staff ..... (15 pts)</li> </ul>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
	<p><b>7. Fee Proposal (100 points possible)</b></p> <ul style="list-style-type: none"> <li>a) Focus Unit Services:  <math>30 \times (\text{Lowest bid } \\$ \_\_\_ / \text{man-hr}) / (\\$ \_\_\_ / \text{man-hr bid}) = \_\_\_\_\_</math></li> <li>b) Unit Turnover Service:  <math>20 \times (\text{Lowest bid } \\$ \_\_\_ / \text{man-hr}) / (\\$ \_\_\_ / \text{man-hr bid}) = \_\_\_\_\_</math></li> <li>c) Routine Inspection Services:  <math>30 \times (\text{Lowest bid } \\$ \_\_\_ / \text{man-hr}) / (\\$ \_\_\_ / \text{man-hr bid}) = \_\_\_\_\_</math></li> <li>d) Emergency Services:  <math>3 \times (\text{Lowest bid } \\$ \_\_\_ / \text{man-hr}) / (\\$ \_\_\_ / \text{man-hr bid}) = \_\_\_\_\_</math></li> <li>e) Special Services:  <math>15 \times (\text{Lowest bid } \\$ \_\_\_ / \text{man-hr}) / (\\$ \_\_\_ / \text{man-hr bid}) = \_\_\_\_\_</math></li> <li>f) Consultation/Training Services:  <math>2 \times (\text{Lowest bid } \\$ \_\_\_ / \text{man-hr}) / (\\$ \_\_\_ / \text{man-hr bid}) = \_\_\_\_\_</math></li> </ul> <p><b>Point Score = Sum of a-f</b> (100 points possible) _____</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p><b>Total Score</b> ..... (600 points)</p>		<p>_____</p>
<p><b>ADJUSTED FINAL SCORE</b></p>		<p>_____</p>

## **APPENDIX F—SUGGESTED HOUSEKEEPING AND LEASE LANGUAGE**

### *Suggestions for residential lease agreements*

- Eliminate the words “exterminate,” “extermination,” and “exterminator.” Replace with “manage pests,” “integrated pest management (IPM),” and “pest management professional (PMP).”
- Specify that residents are to report any pest sightings through the work order system so that the PMP can address the infestation at no cost to the resident. The owner/operator will pay for pest control, but the resident must prepare for the service as instructed in writing, let the PMP in to service, and maintain the unit according to the housekeeping standards so that conditions within the unit do not support the growth of the infestation. Failure to do any of these is a lease violation.
- Within the dwelling unit, garbage must be stored in a bag in a lidded trash receptacle. Trash should be promptly removed from the dwelling unit and placed into trash receptacles. Cans, jars, bottles, cardboard, and paper are not to be stored for extended periods on property.

### *Suggestions for housekeeping and unit inspection standards*

- Walls: Report holes larger than ¼ inch to maintenance.
- Doors: Door sweeps should be intact at the bottom of each door that leads to the outside.
- Trash and garbage: The trash bag should never overflow in the unit. Cans, jars, and bottles must be rinsed if they are to be stored. Cardboard and paper are not to be stored on property for extended periods.
- Refrigerator: Must be clean, including the space behind, floor underneath, and surface on top of the refrigerator.
- Sink: Dirty dishes must be washed and put away nightly.
- Lawn: All plants (including trees, bushes, and shrubs) must be trimmed so that they are at least 2 feet away from the side of the building.
- Windows: Screens should be in place and free from holes.
- Entire unit should be free of rodent or insect infestation. If you see pests or signs of pests (droppings, damage, eggs, or cast skins), call in a work order to central maintenance at \_\_\_\_\_. A pest management professional will address the problem at no cost to you.
- Cabinets: No expired food.
- Tub and shower: Should be clean and free of any mildew and mold.



## APPENDIX G—EMPLOYEE CERTIFICATE OF COMPLETION

Use this form for employees who have read this guide and understand their role in IPM implementation. Copy and cut out the certificate for the employee file. A PDF of this certificate is also available at: [www.stoppests.org/file/Employee-Certificate](http://www.stoppests.org/file/Employee-Certificate).

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Cut Here  
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The employee acknowledges that he or she has carefully read the IPM Guide for Affordable Housing, understands all of the information, and agrees to do his or her part as described here.

Employee Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

