

# SFHIPM

*Intelligent Pest Management in  
San Francisco Housing Communities*



**SF Environment**  
Our home. Our city. Our planet.



# Guidelines for Integrated Pest Management in San Francisco Multi-Family Housing Communities

**Developed by Pestec Integrated Pest Management for the San Francisco Department of the Environment**

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# Table of Contents

1. [Introduction](#)
2. [Integrated Pest Management \(IPM\)](#)
  - a. [Why Integrated Pest Management?](#)
  - b. [IPM and the City and County of San Francisco](#)
  - c. [IPM Principles](#)
  - d. [The IPM Team](#)
3. [Pests in San Francisco Multi-Family Housing Communities](#)
  - a. [Existing Pest Problems](#)
  - b. [Conditions Conducive to Pest Activity](#)
  - c. [Current Pest Control Practices](#)
4. [Implementing an IPM Program at the San Francisco Housing Authority \(SFHA\)](#)
5. [Pestec Policy Recommendations for San Francisco Multi Family Housing Communities](#)
6. [IPM Tools and Appendices:](#)
  - [A: Sample IPM Policy Statement – SFHA](#)
  - [B: Alice Griffith Sample Integrated Pest Management Plan:](#)
  - [C: Sample Request for Qualifications for IPM:](#)
  - [D. Sample Communication Plan](#)
  - [E. Sample Pest Management Lease Addendum](#)
  - [F. San Francisco Department of the Environment IPM Toolkit Guide](#)
  - [G. San Francisco Multi Family Housing Pest Proofing Guidelines](#)
  - [H: Alice Griffith Integrated Pest Management Physical Assessment:](#)
  - [I. Monitoring Forms and Fact Sheets:](#)
    - [San Francisco Housing Authority Pest Management Deficiency Inspection Checklist](#)
    - [Roach Trap Monitoring Form](#)
    - [SFHA Pest Sighting Log Book](#)
    - [SFHA Deficiency Report Form](#)
    - [Simple Ways to Avoid Moving Pests with You on Moving Day](#)
    - [Bed Bug FAQ](#)
    - [UC IPM Quick Tip Fact Sheet: Ants](#)
    - [UC IPM Quick Tip Fact Sheet: Cockroaches](#)
    - [UC IPM Quick Tip Fact Sheet: Bed Bugs](#)
    - [UC IPM Quick Tip Fact Sheet: House Mouse](#)
    - [New York Department of Health and Mental Hygiene: Stop Bed Bugs Safely](#)



## Introduction

Pests pose health risks to residents of housing communities in San Francisco and cause structural and economic damage to residences. Cockroaches and mice introduce allergens and act as asthma triggers in environments where children and adults are already at risk of asthma. Residents and property managers are using traditional pest control methods, such as spraying chemical pesticides or using pesticide foggers or bombs to eliminate infestations, however many of their tactics are ineffective or do not address the root of the problem. In contrast, an Integrated Pest Management program addresses the underlying causes of pest infestations and focuses on prevention. This document is designed as an overview of pest problems at multi-family housing communities in San Francisco and an introduction to reduced risk integrated pest management (IPM) principles. It provides a series of recommendations for implementing IPM programs in housing organizations and the tools to get started. Those tools include a series of policy recommendations for the San Francisco Housing Authority (SFHA) that are designed to maximize the resources available for pest management and focus on long-term reduced cost solutions and pest prevention.



## Integrated Pest Management

Integrated pest management (IPM) is a common-sense process for achieving long-term environmentally sound pest control by utilizing various non-chemical and reduced-risk chemical methods. IPM focuses on pest prevention by identifying and eliminating conditions conducive to pest activity to preempt future pest infestations. IPM treats the causes of pest infestations instead of the symptoms by relying on data collection through regular building inspections and pest monitoring. Treatment focuses on “reducing and eventually eliminating sources of food, water and harborage available to pests and limiting access into and throughout buildings.”<sup>1</sup> Municipalities, schools, universities, businesses and housing agencies throughout the United States have adopted IPM programs to reduce long-term pest control costs by investing in preventative programs of pest management.

### Why Integrated Pest Management?

Structural Integrated Pest Management provides a variety of benefits to organizations who adopt IPM programs. The key environmental benefit of structural IPM is improved indoor air quality through reduced pesticide-use and the elimination of asthma triggers like cockroaches, mice and other pests. However, there are additional benefits to adopting an IPM program, including:

- **Proactive pest control:** IPM prevents pest access and conditions conducive to pest activity while directly involving every pest control stakeholder and members of the community in pest prevention
- **More effective pest control:** Long-term pest prevention strategies are more effective at suppressing conditions conducive to pest activity than short term “quick-fix” approaches that use traditional pest control methods to treat pests after an infestation has been observed. IPM methods are pest control “best practices” within the pest control industry.
- **Cost-effective pest control:** By investing in practices that promote prevention over regularly scheduled chemical applications, pest control costs are reduced by avoiding major pest infestations in the future and service visits overtime. IPM programs have also been shown to decrease health related costs by increasing air quality in residences and decreasing the presence of asthma triggers and allergens. Housing agencies that have adopted IPM programs have also seen reduced costs from reduced pesticide use, issues related to employee stress and losses from physical assessment scores, health department complaints and court cases.

### IPM and the City and County of San Francisco

In 1996 the City and County of San Francisco officially adopted an integrated pest management (IPM) ordinance requiring city properties to minimize the use of pesticides to the maximum extent possible.

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<sup>1</sup>*Integrated Pest Management Kit for Building Managers: How to Implement an Integrated Pest Management Program in Your Building(s).* Massachusetts Department of Food and Agriculture Pesticide Bureau. (last accessed November 2012: [http://www.mass.gov/agr/pesticides/publications/docs/IPM\\_kit\\_for\\_bldg\\_mgrs.pdf](http://www.mass.gov/agr/pesticides/publications/docs/IPM_kit_for_bldg_mgrs.pdf) )

Since implementation, the San Francisco integrated pest management program has successfully decreased pesticide use on city properties, limited unnecessary treatment visits and successfully managed pests throughout the City and County. *The San Francisco IPM program can serve as a model for the San Francisco Housing Authority.*

## IPM Principles

The fundamental principles of IPM consist of:

- (i.) inspection, ongoing monitoring and recordkeeping,
- (ii.) pest exclusion and structural repair,
- (iii.) sanitation,
- (iv.) reduced-risk pesticide applications as necessary,
- (v.) communication and
- (vi.) education

These interrelated strategies are the foundation of an effective IPM Program.

## Inspections, Monitoring and Record Keeping

Inspections are the primary weapon in an IPM program and provide a wealth of information about pests and the environments where they live. The goal of an inspection is to detail pest activity present and building conditions that cause pest activity, such as sources of food and water, areas of harborage and points of access into and through buildings. Inspection reports detail “pest prone places” that require regular monitoring and map the placement of all monitoring devices left behind. Reports should include an evaluation of the severity of any infestations or deficiencies found (e.g. “severe”, “moderate”, “minimal”) and a list of recommended actions necessary to treat infestations or abate structural and sanitary deficiencies. Sample inspection forms and reports in [Appendix I](#) can be adapted to meet the needs of pest inspections at SFHA communities.



**Inspections are the primary weapon in an IPM Program**

Subsequent inspections monitor previously identified pest prone places and building deficiencies to insure that any suspect building conditions are remedied immediately. This method of record-keeping and monitoring allows pest management stakeholders to track pest trends over time and provides updates on the condition of a building. Building occupants should also be encouraged to *self-report* pest activity and structural deficiencies in between regularly scheduled inspections to ensure that pest reporting data is consistent and constant over time.

## Pest Exclusion and Structural Repair

Pest exclusion and structural repairs prevent access into and through buildings and eliminate harborage areas for pests. Pests travel inside of walls, along electrical and plumbing lines, in ceiling and floor voids, and on the items occupants carry into buildings. Pests find sources of food and water in buildings where repairs are needed. Areas that provide pests access to interiors and harborage within buildings are called “structural deficiencies”, which must be fixed to prevent pest activity. Limiting pest access into buildings, through gaps under doors, holes in exterior walls or broken screens, and limiting pest access through buildings, in between gaps along plumbing and electrical lines, or under doors from room to room and unit to unit, can be accomplished by identifying and remedying those structural deficiencies, either through structural additions (door sweeps) or repairs (sealing plumbing and electrical lines). Keeping pests out is the first step in preventing pest infestations in a building. The next step is to eliminate areas where pests can hide. Harborage areas include unsealed baseboards, cracks and crevices in walls and ceilings, wall voids and more. Eliminating pest harborage prevents infestations from going unnoticed until it is too late. The condition of a building is directly related to how pest prone it is; however, incremental structural repairs designed to prevent pest access and harborage will go a long way towards abating pest infestations and preventing pest problems over the long-term.



Structural Repairs can prevent pest harborage and access

## Sanitation

Sanitation is essential to pest control and prevention. Good sanitation habits prevent pest access to sources of food, water and harborage. Proper sanitation limits the resources pests need to live and reproduce. Reducing clutter, cleaning under kitchen counters, and behind stoves, regularly removing trash and keeping exterior trash containers away from entryways will reduce the attractiveness of a building to pests and the conditions that allow them to survive. Minimum sanitation standards should be instituted to minimize unsanitary conditions. The following practices are helpful in reducing sanitation conditions conducive to pest activity:

- Store food in containers that are inaccessible to pests. Containers must have tight lids and be made of plastic, glass, or metal.
- Store and seal food waste in plastic bags before removal.
- Keep indoor garbage in lined, covered containers and empty daily.



Sanitation is pest prevention and control

- Rinse and drain containers with liquid food residues (e.g. milk cartons or juice boxes) before discarding.
- Properly dry and store mops and mop buckets (i.e. hang mops upside down, empty buckets and rinse with clean water).
- Regularly clean surfaces in food preparation and serving areas.
- Thoroughly clean around and under appliances and furnishings that are rarely moved (e.g. refrigerators, freezers, and shelf units) to remove accumulated grease, dust, etc. at least monthly.
- Clean food-contaminated dishes, utensils, and surfaces by the end of each day<sup>2</sup>

## Safer Cleaning

These sanitation practices are designed to improve tenant’s quality of life and eliminate sources of pest activity. However, many consumer cleaning products can be harmful to human health and the environment. Included in **Appendix I** is the **SF Environment Easy and Safe Cleaning Products for the Home Fact Sheet** which provides recommendations for affordable, least toxic alternatives for cleaning the home. By choosing safer products and reading labels, tenants can protect themselves from adverse health effects. Residents can safely dispose of toxic products free of charge by calling the San Francisco Hazardous Waste Facility at Recology at (415) 330-1405.

## Reduced-Risk Pesticide Applications as a Last Resort

Chemical pesticide-use may be a part of an IPM program, however, chemical pesticide applications should always be used in combination with other non-chemical treatment strategies. If pesticides are necessary, they should be selected from a reduced risk pesticide list like the San Francisco Department of the Environment reduced-risk pesticide list or the Bio-Integral Resource Center's directory of least-toxic pest control products.<sup>3</sup> Pesticide applications should take place so as to avoid exposure and to limit the impacts chemicals may have on sensitive populations (pets, children, asthmatics, and the elderly). Tenants should be informed about the dangers of pesticide exposure and given information about reduced-risk options. The use of over the counter foggers and aerosol spray pesticides should be prohibited through a tenant pest management lease addendum (see [Appendix E.](#))

## Communication

Communication between property managers, pest management specialists, tenants and staff working in areas impacted by pests is a critical component of an integrated pest management program. Empowering staff and tenants to watch for and report any pest sightings or pest damage improves the effectiveness of monitoring programs and allows for a more rapid, better informed response to pest problems. Tenants impacted by pests are more likely to support the IPM program if they have the assurance of direct communication and rapid response. Open lines of communication between property management, tenants, staff and a pest control professional facilitates an effective IPM program by allowing for the necessary flow of information concerning pest problems.

<sup>2</sup>Adapted from Simmons, Sewell “Pest Prevention: Indoor Maintenance Practices”, California's Coalition for Adequate School Housing, April 2006; (<http://www.cashnet.org/resource-center/resourcefiles/618.pdf> last accessed November 2012).

<sup>3</sup><http://www.birc.org/Directory.htm>



## Education

Training staff and tenants on the fundamentals of IPM increases the effectiveness of an IPM program by empowering tenants to take control of pest problems on their own and giving staff members the information and skills necessary to monitor for pests, identify structural deficiencies and sanitation issues and remedy conditions conducive to pest activity. In-house IPM knowledge allows property managers to directly address pest problems. If it becomes necessary to contact a pest professional, the information gathered in-house is essential to treating the problem effectively. Knowledgeable tenants and staff can cut down on ineffective treatments and unnecessary service visits.

## The IPM Team

Successful IPM programs define the roles and responsibilities of pest management stakeholders through the development of an “IPM Team”. Stakeholders include administrators, property managers, maintenance staff, resident support staff, building occupants and pest management professionals (PMPs). Defining the roles and responsibilities of each of these stakeholders provides an outline for how IPM should be implemented within an organization and how communication about pest management needs is organized and addressed. IPM Team members are responsible for making decisions about pest management and carrying out the various pest management operations of the IPM program. The basic roles of the IPM team are outlined below.



The IPM Team is essential to an effective IPM Program

## IPM Coordinator

Organizations adopting an IPM program should appoint an IPM Coordinator to oversee pest management throughout the organization. An IPM coordinator is typically an administrator with operations and/or risk management authority who has knowledge of the pest management needs of the organization. The IPM Coordinator is the first point of contact for pest management requests from property managers and staff and acts as a liaison between property managers, building occupants and pest management professionals. IPM Coordinators are responsible for maintaining records of all pest management services, pest inspection reports, pest activity sightings, and pesticide applications. They are also responsible for ensuring all pest management services adhere to the IPM practices outlined in the IPM Plan and are consistent with the overall IPM Policy adopted by the organization. The IPM Coordinator should also serve as an information resource on pest management for interested members of the organization, property managers and building occupants.

## Property Managers

Property managers are the most important part of any IPM program in housing organizations and are on the front line of pest prevention. It is critical to the effectiveness of an IPM program to have

property managers who are familiar with integrated pest management methods and the overall goals of the program. Property managers are responsible for the following aspects of pest management:

- Keeping records of reported pest activity by tenants and staff
- Identifying building deficiencies conducive to pest activity during regular inspections and at unit turnover
- Notifying residents of pest control and structural repair services
- Coordinating repairs and addressing adverse sanitation conditions with maintenance, housekeeping staff and tenants
- Coordinating with pest management professionals during service visits
- Providing tenants information about pest management
- Evaluating the effectiveness of services and repairs, and ensuring services are consistent with the IPM Policy
- Enforcing lease and housekeeping standards related to pest management

## Maintenance and Turnover Staff

Maintenance and turnover staff are essential to a sustainable IPM program. Structural repairs that block pest access into and through buildings and eliminate pest harborage *are* pest prevention. Turnover staff is responsible for pest proofing vacant units by repairing cracks and crevices, sealing gaps around plumbing and gas lines, and installing door sweeps. Vacant units can also be returned to preferred sanitation levels through a thorough cleaning. [Appendix G: SFHA Pest Proofing Guidelines](#) provides an outline of effective pest proofing methods that unit turnover staff can implement in SFHA units. Maintenance and turnover staff should be educated on IPM methods and pest prevention standards to prepare them for pest proofing repairs.

## Residents

Maintaining requisite housekeeping and sanitation standards, reporting pest activity and building deficiencies conducive to pests, removing clutter and waste and properly storing food are all required to keep pests out. During the move-in process and regular unit inspections, residents should be informed and reminded of their housekeeping responsibilities. When pest problems are related to poor sanitation, residents should be encouraged to improve the condition of their unit before any other pest management actions are taken. Residents should also be introduced to the fundamentals of IPM, instructed on the use of reduced risk pest control options, and educated about the risks of over the counter pest remedies such as aerosol pesticides, foggers and unlabeled chemical treatments.

## Resident Support Staff

Resident support, facility staff, home health care professionals, translators, non-profit organizations, faith based groups and others who work in the homes of residents and who regularly assist tenants also have a role to play in IPM. Resident support staff can help residents prepare their units for treatment, assist residents understand their responsibilities concerning housekeeping and sanitation standards, provide useful information to property managers, staff and PMPs about resident limitations and/or unit complications that are detrimental to pest management goals.



## **Pest Management Professionals (PMPs)**

Many aspects of an IPM program can be completed “in house” by the team members outlined above. However, PMPs are key participants in pest management programs. PMPs can consult with the IPM team on the best course of action for eliminating a pest problem and provide pest management services as necessary for troublesome or ongoing infestations. When a pest problem requires a reduced risk chemical treatment, licensed pest control professionals and pesticide applicators can provide chemical treatments in a manner consistent with state law. Many pest control operators are IPM certified through third party certification organizations such as Green Shield Certified, EcoWise Certified and Green Pro. Certified IPM companies give organizations reassurance that the services they are receiving are consistent with the goals of their IPM programs. If necessary PMPs can also fill in resource gaps for organizations at any step of the IPM program: regular monitoring, periodic inspections, structural repairs, sanitation work and turnover work, training for the IPM Team and residents, and special treatments as necessary.



## Pests in San Francisco Multi-Family Housing

In the Spring of 2012 Pestec completed a physical site assessment detailing pest problems and structural and sanitation conditions conducive to pest activity at San Francisco multi-family housing community Alice Griffith. The report from the site visit is attached as [Appendix H: Alice Griffith IPM Green Physical Assessment](#). The assessment combined with data from work completed at other SFHA locations provides a snap shot of the pest problems in San Francisco multi-family housing. Pest management in San Francisco multi-family housing communities should focus on three interrelated issues conducive to pest infestations:

- Existing pest populations,
- Needed structural repairs and
- Poor sanitation conditions.

### Existing pests

Cockroaches and mice are the most frequently encountered pests in SFHA multi-family communities. Both pests pose potential threats to human health and cause structural damage to residences. The presence of either cockroaches or mice significantly decreases the air quality of a building and both are known allergens and asthma triggers. Both species are also known vectors for human disease.



Cockroaches are the most common pest encountered in multi-family housing communities

### Conditions Conducive to Pest Activity

Every home has the potential to harbor pests. In multifamily housing pest infestations occur when certain conditions for pest activity are met. Pest prone places are caused by structural deficiencies that allow pests access into and through buildings and provide pests with food and shelter. In San Francisco the units with pests have similar structural deficiencies in similar areas:

#### Kitchen

- Unsealed escutcheon plates in kitchen sinks allowing pest shelter and access
- Improperly sealed water lines and leaky plumbing under the sink
- Stove gas lines not sealed properly, allowing pests access between units
- Loose counter back splashes and/or front edges
- Improperly sealed cabinets around the sink, stove, stove-hood and kick-plates

#### Bathroom



- Gaps, cracks and crevices around tub, sink and toilet molding
- Loose medicine cabinet doors and installations that allow pests shelter in and behind medicine cabinets

### General

- Gaps in molding
- Loose door hinges
- Windows sealed incorrectly and/or without screens or with broken screens
- Loose baseboards
- Radiators that are improperly sealed allowing pest access throughout housing communities
- Unsealed piping
- Broken electrical outlets
- Missing outlet cover plates
- Doors requiring door sweeps



**Kitchen sinks provide pests food, water, shelter and access into and through buildings**

### Sanitation

Poor sanitation conditions can provide pests access to food and storage. Conditions observed in San Francisco multi-family communities that can lead to increased pest populations include:

- Clutter providing shelter to pests including cardboard boxes, a favorite hiding place for cockroaches
- Leftover food residue in kitchens and living areas
- Unsealed or food containers
- Poor waste management
- Presence of cockroach frass and mice droppings

Included in [Appendix I: Monitoring Forms and Fact Sheets](#) are monitoring forms to help residents and housing staff identify conditions conducive to pests in housing units throughout San Francisco. [Appendix G: SFHA Pest Proofing Guidelines](#) provides a set of pest proofing guidelines for housing units. These guidelines can help personnel, turnover-staff and residents to pest proof their units by identifying the specific structural causes of common pest problems at housing properties and provide solutions for remedying them. The San Francisco Department of the Environment has also compiled a set of Pest Prevention by Design (PPBD) Guidelines that outline design features building managers can implement to “build pests out” of buildings. (The PPBD Guidelines can be accessed at <http://www.sfenvironment.org/download/pest-prevention-by-design-guidelines>)

## Current Pest Control Practices at SFHA Communities

SFHA does not currently have a blanket contract for pest control services. Property managers select services from a variety of pest control providers on an as needed basis. Smaller pest management projects do not have to go out to bid. In the past, pest control was done in house, a practice that we strongly recommend be reinstated to streamline pest management throughout the SFHA.



## Recommendations for Implementing IPM at San Francisco Multi-Family Communities

The following recommendations for implementing IPM at San Francisco multi-family housing communities have been designed to maximize the resources available for pest management and focus on long-term reduced cost solutions and pest prevention:

- Adopt an IPM Policy
- Appoint an IPM Coordinator
- Develop an IPM Plan
- Adopt IPM focused PMP Hiring Practices
- Implement a pest management lease addendum
- Educate staff and residents on IPM and the risks associated with traditional chemical treatments

### Adopt an IPM Policy

A policy statement for integrated pest management should state the intent of the Housing Authority to implement an IPM Program. The purpose of an IPM policy is to formalize the approach to pest management and provide guidance to property managers and staff on how to deal with pest infestations. The overarching goal of an IPM policy is to establish a more effective and efficient pest management program; however, defining specific goals will also guide the decision making process when implementing the program. The policy statement should outline the general goals of the program, describe the staff involved in implementation (the IPM Team) and provide an overview of the IPM procedures being adopted. [Appendix A: Sample SFHA IPM Policy Statement](#), provides a sample policy statement which can be adapted to meet the goals and needs of SFHA.

### Appoint an IPM Coordinator

The IPM coordinator (IPMC) is the person responsible for the day to day operation of a pest management program. IPMCs ensure the program meets the requirements of the IPM policy and is implemented according to the IPM plan. They coordinate service visits from PMPs and in house services to remedy conditions conducive to pests. They track the efficacy and progress of the IPM program and manage the expectations of pest management stakeholders. The IPM coordinator position should be filled by an administrator with operations and/or risk management authority who has knowledge of the pest management needs of the organization. IPM Coordinators should be required to complete up to 6 hours of training on integrated pest management methods, the essential elements of the SFHA IPM Policy, pesticide safety and notification procedures and coordinator responsibilities in relation to other stakeholders in the IPM program.

### Adopt a Communication Plan

A communication plan streamlines the flow of information in an IPM program. The communication plan defines stakeholder responsibilities regarding pest sighting reports, infestation evaluations and service requirements. Clear lines of communication expedite the pest management process. [Appendix D: Sample Communication Plan](#) outlines a communication strategy at SFHA.

## Develop an IPM Plan

The design of the IPM program is outlined in an IPM plan. An IPM Plan outlines the manner in which pest management is provided at SFHA locations and provides guidelines for SFHA staff on pest management at their buildings and a set of strategies for any contractors providing pest control services to use. [Appendix B: Sample Alice Griffith IPM Plan](#) provides a sample IPM plan which can be adapted to meet the goals and needs of SFHA. IPM plans are “living” documents that require periodic reviews and updating as pest management objectives change and as new information on pest management becomes available.

## Adopt Integrated Pest Management Professional (IPMP) Hiring Practices

SFHA should implement an IPM pest management professional (PMP) hiring policy to ensure that the needs of the pest management program are met by any contractors SFHA may hire for pest control. The IPM Plan is essentially a scope of work for PMPs, and defines the pest management strategies contractors should use for each pest they encounter. The IPM Plan scope of work allows SFHA to take the lead on pest prevention by determining beforehand how pest control services should be conducted. The quality of the work is regulated by the demands of the IPM program and the IPM plan presents PMPs with a clear picture of SFHA's expectations. By requiring PMPs to bid on a set scope of work, SFHA can acquire effective and economically efficient and competitive services. [Appendix C: Sample Request for Qualifications for IPM](#) provides a sample pest management RFP which can be adapted to meet the goals and needs of SFHA. Most of the work described in an IPM plan can be completed in house by property managers, maintenance staff and tenants, therefore hiring a PMP will only be necessary on an as-needed basis. However, hiring a contractor with knowledge of IPM will help support the overall goals of the program and provide effective services at a reasonable cost. In addition to the Sample RFQ provided, we also recommend referring to the **EcoWise IPM Contracting Tool Kit for Developing a Structural IPM Program and Contracting for Structural IPM Services** when developing contracting specifications for an SFHA IPM Program. The tool kit was designed for a public agency making the transition from conventional structural pest control to IPM and provides step by step instructions for contracting IPM services (the tool kit can be accessed at <http://ecowisecertified.org/toolkit/toolkit.pdf>).

## Implement a Pest Management Lease Addendum

SFHA should implement a pest management lease addendum designed to address the goals of the IPM program. The addendum should specify that residents are required to report any pest activity and conditions conducive to pests requiring structural repair immediately through the proper channels of communication. Residents should also be required to prepare their units as necessary for treatment, allow access to their units for treatment and maintain their unit to required housekeeping standards prior to and after treatment. Failure to abide by any of these requirements should be considered a lease violation. [Appendix E: Sample Pest Management Lease Addendum](#) provides a framework for a lease addendum.





## Educate staff and residents on IPM

SFHA should provide annual trainings on IPM to members of the IPM team or staff involved with the IPM decision making process and residents. Informational materials about IPM should be on hand for staff and residents when pest problems occur. Staff should inform residents of the risks associated with traditional pest control methods like the use of over the counter aerosol pesticide sprays, foggers and unlabeled pesticides.



## **Pestec Policy Recommendations for San Francisco Multi Family Housing Communities**

- **Adopt an IPM policy**
- **Appoint an IPM coordinator**
- **Adopt an IPM plan that meets the needs of the IPM policy**
- **Adopt integrated pest management professional (IPMP) hiring practices**
- **Outline pest management service categories to fix resident and PMP expectations about what constitutes pest management services at your communities (e.g. “ongoing”, “emergency”, “focus unit”, “Q&A” etc.)**
- **Implement a pest management lease addendum**
- **Provide pest management training for maintenance staff, turnover workers, and property managers**
- **Implement the use of pest sighting log books and deficiency reporting logs at all community locations**
- **Adopt a communication plan to organize information about pest management complaints and treatments**
- **Review budget for pest management services and allocate budget funds towards pest prevention activities and structural repairs**



## IPM Tools

The appendices of this document are meant for use and adaptation by San Francisco multi family housing communities to design an IPM program. They provide documentation to help with the transition to IPM adoption. They include:

**A: Sample IPM Policy Statement – SFHA:** Policy statement stating the intent of the Housing Authority to implement an IPM Program.

**B: Alice Griffith Sample Integrated Pest Management Plan:** outlines the manner in which pest management should be provided at SFHA locations and provides guidelines for SFHA staff on pest management at their buildings and a set of strategies for any contractors providing pest control services to use.

**C: Sample Request for Qualifications for IPM:** RFQ for IPMP hiring purposes

**D. Sample Communication Plan:** to streamline communication about pest management

**E. Pest Management Lease Addendum:** a sample lease addendum for pest management to guarantee tenants are in compliance with the IPM Policy.

**F. San Francisco Department of the Environment IPM Toolkit Guide**

**G. San Francisco Multi Family Housing Pest Proofing Guidelines**

**H. Alice Griffith Integrated Pest Management Physical Assessment:** Initial assessment of pest problems at Alice Griffith conducted in Spring 2012.

**I. Monitoring Forms and Fact Sheets:** various forms useful in IPM programs.

## Appendix A: Sample IPM Policy Statement - SFHA<sup>4</sup>

### San Francisco Housing Authority: Sample IPM policy statement

The San Francisco Housing Authority hereby adopts an Integrated Pest Management Policy to alleviate pest problems at SFHA managed buildings with the least possible hazard to people, property, and the environment. Our policy requires the adoption of an integrated pest management (IPM) program to control structural and landscape pests in and around SFHA buildings. IPM emphasizes non-chemical strategies such as sanitation, pest exclusion and structural repairs to achieve long term solutions.

#### Goals

The overarching goal of the SFHA IPM policy is to establish a more effective and efficient pest management program at SFHA locations. Specific goals at SFHA include:

- Maintaining pests at levels that prevent them from either becoming a health hazard or causing economic damage
- Focusing on long term pest prevention by identifying and altering cultural, structural and environmental conditions at SFHA locations that encourage pest problems.
- Using the safest effective practices available. Reducing the use of pesticides that pose a threat to human health and indoor air and water quality.
- Designing and maintaining a written plan for implementing IPM
- Establishing and maintaining pest activity reporting and recordkeeping.
- Educating SFHA staff and occupants about pest management problems and solutions

SFHA recognizes that all building occupants have a role in reducing pest problems and reliance on pesticides.

#### Staff Affected by the IPM Policy

All our staff and residents, along with any contractors hired to perform pest management or structural repairs, will be subject to this policy. (Name TBD, the SFHA IPM Coordinator) is the staff contact for the IPM program. In addition, each SFHA community property manager will manage on-site activities concerning the IPM program. Property managers will be responsible for maintaining pest management records, hiring pest management contractors, educating staff and residents about pests and pest management, and facilitating cooperation among all individuals who have a role in pest management. Property managers must also approve pesticides before any application.

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<sup>4</sup> Adapted from Flint et. al “Establishing Integrated Pest Management Policies and Programs: *A Guide for Public Agencies*” University of California Division of Agriculture and Natural Resources Publication 8093  
<http://ucanr.org/freepubs/docs/8093.pdf>

## Pests Included

Pests include insects, spiders, wood-infesting organisms, nuisance birds, and any other undesirable organisms in, on, or under structures, excluding microorganisms. Strategies for managing pest populations will be influenced by the pest species and the degree to which that population poses a threat to people, property, or the environment. The most common pests found at SFHA locations are: cockroaches, mice, rats, ants, flies and bed bugs.

## IPM Plan

Pest management strategies must be included in an approved IPM Plan for SFHA managed properties. The IPM Plan will contain both general procedures and specific action plans for each pest listed above. Each action plan will include staff roles and responsibilities, communications procedures, inspection and monitoring guidelines, an action threshold, and acceptable pest management strategies. An IPM Plan is a living document and should be reviewed, evaluated and updated at least annually by SFHA staff.

## Pesticides Used

SFHA will maintain a limited list of approved pesticides for use when required. Products will be selected after careful consideration of hazards by a qualified entity, for example, the San Francisco Department of the Environment. The list will be reviewed annually by the IPM Coordinator.

## Notification

SFHA property managers have the responsibility to notify residents and staff of upcoming treatments that will involve a pesticide application. Residents will be informed of the IPM program at the time of move-in. Move-in orientation should include a brief introduction to IPM and the resident's responsibilities in the IPM program. Notices of pest management services will be posted in designated areas in the offices and delivered to residents at least 48 hours in advance of service and are to remain posted in accordance with instructions on the pesticide product's label.

For some treatments, Property Managers will also deliver preparation instructions. Preparation instructions will be outlined in the IPM Plan, but will depend on the level of infestation in the unit and the abilities of the tenant. The tenant is responsible for ensuring the pest management professional has access to the unit and for completing the necessary preparations, as detailed in the preparation instructions.

## Record Keeping

Inspection records will detail pest populations and any building conditions conducive to pest activity observed during regularly scheduled inspections by property management and both before and after any approved treatments by pest management professionals. Treatment reports will include the target pest, name and quantity of pesticide used, site of application, date of application, time of application, name of the applicator, the application equipment used, conditions present that contribute to pest infestation, and prevention or nonchemical methods of control used. Forms should be unit/area-specific



in order to identify trends over time. Records will be kept on site at the property manager's office in an IPM log along with:

- Product labels
- Material Safety Data Sheets (MSDSs)
- Proof of registrations/licensing/insurance
- The pest control contract (or pest control crew scope of work)
- Service schedule
- Service log/tickets
- Sample preparation instructions
- Educational materials for staff and residents

Records must be current and accurate if IPM is to work. The objective is to create records from which the IPM Program and adopted pest management practices can be evaluated in order to update the IPM Plan and pest control procedures outlined in the IPM plan, thereby improving the IPM Program and eliminating ineffective and unnecessary treatments.

### **Pest Management Professionals (PMPs)**

Pest Management Professionals (PMPs) must be educated and trained in the principles and practices of IPM. Evidence of training include years of experience along with continuing education at conferences, seminars, or e-learning classes. PMPs must follow regulations and label precautions including those pertaining to notification and recordkeeping. Applicators must be certified by the state, comply with this IPM Policy, and fulfill the requirements of the SFHA IPM Plan. Certification and regulations also apply to maintenance or renovation contractors who may encounter pests during their work. For an overview of the qualifications required for practicing IPM in multifamily housing communities refer to the **EcoWise IPM Contracting Tool Kit for Developing a Structural IPM Program and Contracting for Structural IPM Services** (<http://ecowisecertified.org/toolkit/toolkit.pdf>).



## Appendix B: Alice Griffith Sample Integrated Pest Management Plan

### LOCATION

**Alice Griffith Housing Complex**  
207 Cameron Way  
San Francisco, CA  
94124

### CONTACT

**Property Manager:** Gwen Washington  
**Phone:** 415-715-2050  
**Email:** [washingt@sfha.org](mailto:washingt@sfha.org)

**Alternate Contact:** TBD

**Phone:** 415.###.####

**Email:** ?@sfha.org

### IPM LOG BOOK

**Located at:** Property Manager's Office

## Table of Contents

1. Introduction
2. Pest Management Objectives
3. Communication
4. Pest and Building Deficiency Sighting and Reporting
5. Monitoring and Inspection
6. Pest Management Professional Coordination, Response, Reporting and Recordkeeping
7. Quality Assurance
8. Pesticide Use and Notification
9. Service Categories
10. Pest Action Thresholds
11. Treatment Strategies for Specific Pests



## Introduction

This integrated pest management (IPM) plan was developed for the Alice Griffith Housing Complex in accordance with the San Francisco Housing Authority IPM Policy. This is a comprehensive plan covering the entire complex, and provides specific and general recommendations for the abatement and prevention of pest activity on-site. It describes proposed methods of monitoring and detecting pest activity with an outline of recommended physical and chemical controls for specific pests. For an examination of pest management conditions at Alice Griffith please see **Appendix F: Alice Griffith IPM Physical Assessment**.

## Pest Management Objectives

The two primary objectives of this IPM plan are:

1. To implement preventative pest management strategies and achieve sustained and long-term pest management.
2. Eliminate the use of methods and products that are not in keeping with the SFHA IPM policy.

Key pest(s) of concern: Cockroaches, Mice, Rats, Ants, Bed Bugs, Flies, Spiders, Crickets, Silverfish, Wasps, and Yellowjackets.

## Communication

Communication between property managers, tenants, pest management specialists and staff working in areas impacted by pests is a critical component of this IPM plan. Empowering staff to watch for and report any pest sightings or pest damage can greatly improve the effectiveness of monitoring programs and allow for a more rapid, better informed response to pest problems. Staff and tenants impacted by pest problems are more likely to support the IPM program if they have the assurance of direct communication and rapid response.

## Pest and Building Deficiency Sighting and Reporting

Pest sightings and building conditions conducive to pests should be reported by any staff or resident directly to the IPM Coordinator or property manager on-site. Residents and staff can also make a report in the **Pest Sighting Log Book** located at the property management office and regularly reviewed by the property manager. PMPs will refer to the pest sighting log book on every service visit, note any pest sightings or building deficiencies reported and investigate the causes during scheduled services.

## Monitoring and Inspection

During semi-annual unit inspections, property managers will provide a pest inspection report for each unit. Inspection reports will detail pest activity and pest evidence encountered *and* any structural or sanitary deficiencies. The reports will also detail any “pest prone places” in units that require regular monitoring and/or treatment. The report should also include an evaluation of the severity of any infestations or deficiencies found (e.g. “severe”, “moderate”, “minimal”) and a list of recommended actions necessary to treat infestations or abate structural and sanitary deficiencies.



## **Pest Management Professional Coordination, Response, Reporting and Recordkeeping**

When PMP services are required please select a contractor from the approved SFHA PMP list. Once a service has been scheduled tenants should receive a 48 hour notice informing them of upcoming pest management services. If unit preparation is necessary the PMP will provide unit preparation details and tenants will be required to comply with unit preparation requirements. Tenants must be informed of their responsibility to comply with all preparation instructions or be subject to the consequences of a lease violation. Upon completion of each service, the PMP must submit a summary of any pest activity or evidence observed, building and sanitation deficiencies conducive to pest activity, any pest management actions taken or pesticides applied, and a list of recommendations for further control including repeat services, structural repairs, etc. The PMP 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 Assurance**

Once a year units will be inspected by the property manager and PMP to insure that the recommendations made by PMPs are being carried out and that there are not any IPM deficiencies, pest activity, or other service related issues not being reported by tenants. These inspections will judge the efficacy of the pest management practices employed over the past year. They will also inspect the control methods being used on-site and insure that those methods are in line with the SFHA IPM policy. The results of these on-site inspections are included in an annual quality assurance report which evaluates the quality of the pest management at Alice Griffith.

## **Pesticide Use and Notification**

All pesticides used in the SFHA IPM Program should be selected from the San Francisco Department of the Environment reduced-risk pesticide list or the Bio-Integral Resource Center's directory of least-toxic pest control products. In the rare event that emergency conditions require the use of a pesticide not listed on the SFE or BIRC lists, then approval is required by the SFHA IPM Coordinator in consultation with an IPM Certified PMP and consultation with an 3<sup>rd</sup> party IPM specialist (e.g. the SFE IPM Coordinator). Only after consultation may exemptions be made for the use of unlisted pesticides.

SFHA property managers have the responsibility to notify residents and staff of upcoming treatments that will involve a pesticide application. Residents will be informed of the IPM program at the time of move-in. Move-in orientation should include a brief introduction to IPM and the resident's responsibilities in the IPM program. Notices of pest management services will be posted in designated areas in the offices and delivered to residents at least 48 hours in advance of service and are to remain posted in accordance with instructions on the pesticide product's label. A full listing of the pesticides used on SFHA properties will be kept in each property management office.

## **Service Categories**

Services at Alice Griffith are split into four service categories:



**Focus units:** Units that are infested shall be serviced by a PMP at least monthly until the infestation is gone. Once pest-free, the focus unit will be removed from the monthly service list and inspected on a periodic basis.

**Unit turnover service:** At unit turnover Property Manager or PMP will conduct an intensive unit inspection to detail pest activity and building conditions conducive to pests and provide necessary treatment when units are prepared for occupancy. Turnover preparation may also include structural repairs to correct building deficiencies conducive to pest activity. Typically these units will be existing units changing residents. A unit is treated at unit turnover only if evidence of pest infestation is found.

**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.

**Special services** are those that require special skills, training, or licensing.

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.

## Pest Action Thresholds

Level of control desired (thresholds):

Thresholds for structural and public health pests are very low and slightly vary by location within a facility. Locations with higher densities of people, where food is handled or eaten, near immunocompromised persons, and where people spend extended periods of time pose a higher risk to human health than other areas. The thresholds of pests at Alice Griffith are defined as:

- Less than one (<1) - This threshold means that a measures are taken to prevent pest activity and will require the prioritization of building repairs that will directly reduce pest activity in these areas.
- One or more (1+) - When pests are identified through inspection, monitoring devices, or reports an action ranging along the risk-reduction spectrum will be carried out starting with the lowest risk option..

## Treatment strategies for specific pests

**Rats and mice:** Trapping and exclusion shall be the primary rodent control method for protecting the interiors of Alice Griffith. Openings allowing rodents to enter buildings and other conditions that cause them to proliferate will be identified and will be reported to staff for repairs. Management of exterior rat populations will be controlled using rodent management stations that may contain traps, and/or non-toxic monitoring bait.

**Cockroaches:** Staff and PMPs will combine chemical controls, habitat modification, exclusion and other physical controls to limit sources of food, water, and shelter for roaches. Physical controls employ physical means to remove cockroaches or prevent their movement within a structure. Crack and crevice or containerized cockroach baits are used to directly suppress a cockroach population.



**Ants:** PMPs will use ant baiting for the control of ants. Baiting combined with proper exclusion will keep ants from entering interior areas and control ant populations around the building. Baiting may take longer to kill ants, but will have a much greater impact on the colony as a whole, because ants take bait back to feed to their nest mates. Traditional ant sprays kill only a small fraction of the ants that are out foraging, and the foragers only represent a very small fraction of the total colony. Spraying pesticides around the outside of a structure can lead to run-off that contaminates creeks, rivers, and the Bay.

**Mosquitoes:** PMPs will monitor for mosquito activity and treat standing water for larvae as necessary. When adult mosquito nesting areas are located and determined to be impacting the Recreation Center, the PMP will treat the area using a reduced-risk pesticide for population reduction. The PMP will also inspect the properties to determine areas of entry and recommendations for exclusion such as the installation of flexi-screens (Velcro attached screens produced to fit any size window), and door sweeps.

**Spiders:** Spiders and their webs will be removed with a vacuum or Webber (web removing tool). Sticky traps will be placed under furniture and in areas prone to crawling spiders. PMPs will also provide repair recommendations to exclude spider entrance into the building.

**Flies:** To manage flies, it is most effective to concentrate on eliminating conditions that support the immature stages (maggots). This involves proper storage and disposal of food wastes as well as keeping waste receptacles clean. Many of these sanitation practices will prevent problems with other insects as well. The next most important management strategy for flies is denying their access to a structure. Fly traps will be used in troublesome areas, such as trash compactors and trash storage areas.

**Crickets and Silverfish:** Crickets and Silverfish will be removed with a vacuum. Sticky traps will be placed under furniture and in areas prone to insect entrance. Chemical treatments are not recommended for control. The key to eliminating these pests is to eliminate the conditions on-site that are conducive to their activity.

**Wasps and Yellowjackets:** Control options may vary depending on the proximity to the public and perceived hazard. Optimally they will be carried out either at dawn or dusk. Caution tape may be installed around a nest to protect a passerby. PMPs will be equipped with an appropriate bee suit. Management will consult with a bee handler for the removal and relocation of honeybee nests. If there is suspicion that the bee nest is of Africanized bees, or if the nest presents an immediate hazard, the bees will be removed by a vacuum, the nest will be destroyed by steam, and as a last resort the application of diatomaceous earth. A recommendation will be made to remove the beeswax to prevent damage to the structure.

### **Bed bug Assessment and Treatment**

- Consultation with the room occupants- Bites? Insects?
- K9 bed bug inspection of infested space and adjoining rooms
- Inspection of the linens and mattress for insects, blood stains, bed bug fecal stains.
- Inspection of monitoring Devices: Sticky traps (i.e. double-sided tape, insect traps) should be kept along baseboards and furniture where the staff frequents and clothing storage.
- If bed bug activity is suspected in a room because of bite complaints, a more thorough inspection will be conducted

- Determine the extent of the infestation.
- Cost of replacement vs. treatment of items- is it less expensive to treat an infested item or replace it?
- Define treatment with the advice of a PMP.

### **Post Inspection Treatment**

Post inspection treatment will consist of steaming and vacuuming affected areas and continued monitoring of the area on regularly scheduled visits, to insure the problem does not persist. If a widespread infestation does occur, SFHA can take further steps to combat the problem including the use of bed bug heat treatments in affected areas.

### **IPM Action Table**

The IPM action table below lists the determinants of the injury level for pests commonly encountered in structural pest control, or what is also known as an action threshold: any associated pest activity which causes the injury level to increase to a degree where treatment is necessary. In addition, the IPM action table provides a framework for responding to particular pest infestations. The actions taken by Pestec may vary depending on particular site circumstances and the concerns of stakeholders in pest management at a given site. The actions below are used as guidance when encountering a particular pest.

Pest	Threshold	Monitoring Method	Action Level	Pest Management Action(s)
Rodents	<b>Level One (lowest): Rodent sighting, evidence of activity</b>	Use of non-toxic bait in exterior trapping stations, visual inspections and pest sighting reports.	Rodent sightings, evidence of rodent activity in trapping stations, interior traps, or other evidence of activity	<ol style="list-style-type: none"> <li>1.) An IPM recommendation is generated for cleaning, clutter removal, interior and exterior rodent exclusion.</li> <li>2.) Further visual inspection of the area to identify rodent travel areas and other areas of activity where trapping efforts can be initiated.</li> <li>3.) Add traps to inconspicuous areas or in trapping stations.</li> <li>4.) Review rodent proofing at outside envelope of the building.</li> </ol>
Rodents	<b>Level Two: Rodent sighting(s), trapped rodents, new evidence of rodent activity</b>	Use of traps in exterior trapping stations, visual inspections and pest sighting reports.	2+ rodents per trap/treatment station	<ol style="list-style-type: none"> <li>1.) An IPM recommendation is generated for cleaning, clutter removal, interior and exterior rodent exclusion.</li> <li>2.) Further visual inspection of the area to identify rodent travel areas and other areas of activity where trapping efforts can be initiated.</li> <li>3.) Extra visits during daytime operations for follow-up and trap shuffle.</li> <li>4.) Review rodent proofing at outside envelope of the building.</li> <li>5.) Open inaccessible voids or areas such as the radiator covers along the windows in work areas for trapping.</li> </ol>
Rodents	<b>Level Three (highest): Rodent sightings, trapped rodents, new accumulations of droppings or other evidence in multiple areas</b>	Use of traps in exterior trapping stations, visual inspections and pest sighting reports.	If 3+ rodents are removed from previous visit and rodent activity is noted on the next follow-up service.	<ol style="list-style-type: none"> <li>1.) An IPM recommendation is generated for cleaning, clutter removal, interior and exterior rodent exclusion.</li> <li>2.) Further visual inspection of the area to identify rodent travel areas and other areas of activity where trapping efforts can be initiated.</li> <li>3.) Mass trapping service - traps are set throughout infested area after hours, and removed the following morning. Continue trapping until no further rodents are caught.</li> </ol>
Cockroaches	<b>Level One (lowest): Aggregations of cockroaches local to a work area, kitchen workstation or equipment.</b>	Visual inspections and pest sighting reports.	1+ Cockroach(es).	<ol style="list-style-type: none"> <li>1.) An IPM recommendation is generated for cleaning, clutter removal, crack abatement and/or moisture reduction.</li> <li>2.) Further visual inspection of the area to identify the aggregation area.</li> <li>3.) Addition of sticky traps and bait</li> </ol>

Pest	Threshold	Monitoring Method	Action Level	Pest Management Action(s)
				station.
Cockroaches	<b>Level Two: Aggregations of cockroaches to more than one area in the kitchen, or work areas.</b>	Visual inspection, sticky traps and pest sighting reports.	2-4 Cockroaches per trap/treatment station.	<ol style="list-style-type: none"> <li>1.) An IPM recommendation is generated for cleaning, clutter removal, crack abatement and/or moisture reduction.</li> <li>2.) Further visual inspection of the area to identify the aggregation area(s).</li> <li>3.) Further placement of sticky traps and monitors with food attractant</li> <li>4.) Crack and crevice gel bait application, and bait stations.</li> </ol>
Cockroaches	<b>Level Three (highest): 4+ cockroaches per trap in any given location.</b>	Visual inspection, sticky traps and pest sighting reports.	4+ Cockroaches per trap/treatment station.	<ol style="list-style-type: none"> <li>1.) An IPM recommendation is generated for cleaning, clutter removal, crack abatement and/or moisture reduction.</li> <li>2.) Further visual inspection of the area to identify the aggregation area(s).</li> <li>3.) Steam treatment of cracks and crevices with vacuum clean up.</li> <li>4.) Treatment of cockroaches with contact IPM detergent, OhYeah!</li> <li>5.) Treatment of cracks and crevices with gel, granular bait and/or bait stations.</li> <li>6.) Treatment with Gentrol Insect Growth Regulator (IGR).</li> </ol>
Ants	<b>Level One (lowest): Aggregations of ants local to a work station, equipment, baseboards, windows, doors, restrooms and break rooms.</b>	Sticky traps, visual inspection, pest-sighting reports.	1-10 ants per room.	<ol style="list-style-type: none"> <li>1.) An IPM recommendation is generated for cleaning, clutter removal, crack abatement and/or moisture reduction.</li> <li>2.) Further visual inspection of the area to identify the aggregation area(s).</li> <li>3.) Treatment/clean-up of ants with contact IPM detergent, OhYeah!</li> <li>4.) Spot caulking to minor cracks and crevices that ants may be traveling from.</li> </ol>
Ants	<b>Level Two: Aggregations of ants local to a work station, equipment, baseboards, windows, doors, restrooms and break rooms.</b>	Sticky traps, visual inspection, pest-sighting reports.	Established ant trail	<ol style="list-style-type: none"> <li>1.) An IPM recommendation is generated for cleaning, clutter removal, crack abatement and/or moisture reduction.</li> <li>2.) Further visual inspection of the area to identify the aggregation area(s).</li> <li>3.) Treatment/clean-up of ants with contact IPM detergent, OhYeah!</li> </ol>

Pest	Threshold	Monitoring Method	Action Level	Pest Management Action(s)
				4.) Placement of Advion or Terro ant bait station 5.) Spot caulking to minor cracks and crevices that ants may be traveling from.
Ants	<b>Level Three (highest): Aggregations of ants local to a work station, equipment, baseboards, windows, doors, restrooms, break rooms, hallways, lobby and walls.</b>	Sticky traps, visual inspection, pest-sighting reports.	Established and recurring ant trail and/or multiple trails	1.) An IPM recommendation is generated for cleaning, clutter removal, crack abatement and/or moisture reduction. 2.) Further visual inspection of the area to identify the aggregation area(s). 3.) Treatment of ants with contact IPM detergent, OhYeah! 4.) Placement of Advion and/or Terro ant bait station and/or crack and crevices application with Advion or Terro ant bait gel. 5.) Spot caulking to minor cracks and crevices that ants may be traveling from. 6.) Addition of exterior ant bait station(s) or outdoor crack and crevice gel bait treatment.
Flies	<b>Level One (lowest): Aggregations of flies local to exterior areas, trash room and compactor.</b>	Visual inspection, fly traps and pest sighting reports	Flies hovering near building entrance areas.	1.) An IPM recommendation is generated for cleaning, clutter removal, drain cleaning, areas conducive to and/or moisture reduction. 2.) Further visual inspection of the area to identify the aggregation area(s). 3.) Sanitation inspection and recommendations. 4.) Fly sticky traps.
Flies	<b>Level Two: Aggregations of flies local to work stations, entryways, restrooms, kitchens, and main floor.</b>	Visual inspection, fly traps and pest sighting reports	3+ flies	1.) An IPM recommendation is generated for cleaning, clutter removal, drain cleaning, areas conducive to and/or moisture reduction. 2.) Further visual inspection of the area to identify the aggregation area(s). 3.) Reinspect deficiencies and sanitation. 4.) Additional fly sticky traps, installation of electric fly traps at entrance areas.
Flies	<b>Level Three (highest): Aggregations of flies local to work stations, entry ways, restrooms, kitchens, and main floor.</b>	Visual inspection, fly traps and pest sighting reports	10+	1.) An IPM recommendation is generated for cleaning, clutter removal, drain cleaning, areas conducive to and/or moisture reduction.



Pest	Threshold	Monitoring Method	Action Level	Pest Management Action(s)
				<p>2.) Further visual inspection of the area to identify the aggregation area(s).</p> <p>3.) Reinspect deficiencies and sanitation.</p> <p>4.) Clean up provided by Pestec at hourly service rate.</p>
Bed bugs	<b>Level One: Bed bug activity sighted by staff.</b>	Sticky traps, visual inspection, monitoring stations, and pest activity report	(1)	<p>Immediate clean up of the area by staff or Pestec. Followed by K9 bed bug inspection and treatment as needed.</p> <p>Inspection for cracks and crevices will also be conducted and recommendations for crack sealing made.</p> <p>Consultation with staff in work area and brief educational meeting or handout with assistance of staff manager.</p>
Bed bugs	<b>Level Two: Bed bugs found in dense clutter.</b>	Sticky traps, visual inspection, monitoring stations, and pest activity report	(1 or more)	<p>Triggers quarantine of clutter and thermal treatment of cluttered area.</p> <p>Consultation with staff in work area and brief educational meeting or handout with assistance of staff manager.</p>
Bed bugs	<b>Level Three: Bed bugs found in multiple areas of a room with dense clutter</b>	Sticky traps, visual inspection, monitoring stations, and pest activity report.	Multiple bed bugs or recurring activity	<p>All reported actions above and an extensive heat treatment of the infested space to insure the eradication of every level of the bed bug life cycle.</p> <p>Staff manager must take decision of whether, or when, a staff person with a bed bug infestation may return back to work.</p>



## Appendix C: Sample Request for Qualifications for IPM<sup>5</sup>

### A. General Information

The San Francisco Housing Authority (SFHA) seeks experienced pest management professionals to provide pest control services at SFHA communities. SFHA's pest management policy strives to establish a more effective and efficient pest management program using integrated pest management (IPM) methods and is designed to minimize health hazards to people from pesticide exposure.

IPM, also known as reduced-risk pest management, encourages long-term pest prevention and suppression through biological controls, habitat manipulation and improved landscape and building hygiene, and structural repair and pest barriers. IPM sanctions synthetic chemical pesticides only as a last resort, and only with the least toxic chemicals available that perform the task. IPM depends on understanding a pest's environmental requirements and natural enemies in order to facilitate less toxic pest control and requires ongoing monitoring for pests to ensure that small infestations do not become large ones. IPM seeks to minimize pest concerns while minimizing human health, environmental, and financial risks.

### B. Project Description

Qualification Applicants shall furnish all supervision, labor, materials, and equipment necessary to evaluate, monitor, and provide pest management services for SFHA buildings as outlined below. Pest control methods shall first strive to use non-chemical controls such as trapping and pest proofing, followed by chemical controls only if non-chemicals methods fail.

Using IPM strategies, the contractor shall control structural pests to include:

**Insects and other arthropods:** These include ants, cockroaches, yellow jackets and other wasps and bees, and any other arthropod pest not specifically excluded from the contract.

**Mice and rats:** The contractor shall adequately suppress rats and mice found inside and outside buildings. Pick-up and proper disposal of dead vertebrates is also included in this scope of work, unless other arrangements for collection and disposal are agreed upon.

**Pests excluded from contract:**

Termites and other wood destroying organisms

Pests that primarily feed on outdoor vegetation unless they are invading a structure

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<sup>5</sup> Adapted from the Palo Alto Scope of Work and Request for Qualifications for IPM Structural Pest Control Service and the Stop Pests in Housing "Integrated Pest Management: A Guide for Affordable Housing (<http://www.stoppests.org/what-is-ipm/guide/>)

**Reduce pest problem hotspots** with the goal of solving structural and hygiene challenges so that facilities currently requiring regular service can reduce their need for chemical pest control.

### C. Specific Work Tasks

The contractor shall:

1. Control pests while minimizing human exposure, secondary poisoning to non-target animals and pesticide-related water pollution by adhering to the following conditions:

- the following products shall not be used for insect control:
  - products labeled with the signal word “Danger”
  - organophosphate products (e.g., diazinon or chlopyrifos)
  - carbamate products (e.g., carbaryl)
  - pyrethroid : Containerized pyrethroid products, or pyrethroid products whose application method prevents pyrethroid release to the environment may be authorized by the IPM Coordinator.
- Containerized baits are preferred for ant and cockroach control
- No spray insecticides may be used except insecticidal soaps and plant-based products (e.g., pyrethrins, mint oil, rosemary oil, etc.). Emergency use of other pesticides may be authorized by SFHA’s IPM Coordinator.
- Trapping and exclusion shall be the primary rodent control methods. To prevent bait resistance and secondary poisoning, rodent baits shall only be used when trapping and exclusion are unsuccessful and in consultation with the IPM coordinator.
- No outdoor applications of pesticides of any kind shall be applied on impervious surfaces when a 40% or greater chance of rain is forecast within three days unless the pesticides are containerized baits that will not contribute to runoff pollution.
- Prior to application, contractor must notify property manager of areas that are to be treated with any pest control product other than containerized baits.
- New products that the contractor may wish to use mid-contract must be approved by the IPM Coordinator prior to use.

2. Respond to new or emergency pest management requests within 48 hours of service call.

3. Reduce pest populations at sites designated by the property manager that have historically had regular pest problems requiring regular service (Attachment D) with the goals of:

- reducing the frequency and severity of pest problems using IPM strategies
- reducing access and favorable conditions that support pests, and 3
- reducing the need for chemical pest control

4. Keep records of amount, location and dates of pesticide applications completed during any service visit.

Frequency of site visits may be reduced or eliminated at the discretion of each site manager.

### Monitoring

During the PMP’s visit to the service site they shall refer to the pest sighting log book for reports of pest activity. If there is a report in the log book, the technician shall contact the reporting person for more information if necessary and then proceed to identify:



1. The extent of the infestation
2. The control options most appropriate to the specific location of pest(s) occurring
3. The conditions conducive to the pest(s)
4. If the technician can treat the pest using a non-chemical method they shall carry out the treatment or make arrangements with the necessary building staff to do so. If necessary, the technician shall make a follow-up visit prior to evaluate the effectiveness of the treatment. Authorization of all potential products to be used by the contractor will be conducted before service commences.

If there is not a report in the log book, the technician will inspect the premises and identify:

1. If there is evidence of pest activity
2. If present pest(s) necessitate a treatment
3. The conditions conducive to the pest(s)
4. The control options available to this specific site and pest(s)

All service records will be signed and dated by an appointed person on site and kept in the Pest Sighting Log Book so they may be reviewed.

5. Track pest management and pesticide use. The following records must be kept and procedures followed while servicing these sites:
  - Copies of inspection records and repair recommendations must be provided to property manager after each site visit.
  - Report showing the amount and location of any pesticides used during service visit.

## Service Categories

Services are split into four service categories:

**Focus units:** Units that are infested shall be serviced by a PMP at least monthly until the infestation is gone. Once pest-free, the focus unit will be removed from the monthly service list and inspected on a periodic basis.

**Unit turnover service:** At unit turnover Property Manager or PMP will conduct an intensive unit inspection to detail pest activity and building conditions conducive to pests and provide necessary treatment when units are prepared for occupancy. Turnover preparation may also include structural repairs to correct building deficiencies conducive to pest activity. Typically these units will be existing units changing residents. A unit is treated at unit turnover only if evidence of pest infestation is found.

**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.

**Special services** are those that require special skills, training, or licensing.



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.

Units will be inspected annually or bi-annually by property management, to provide baseline data on pest infestations in SFHA housing communities. This data will provide management with the information needed to define focus units.

## Qualification Application

Firms interested in qualifying to become a pest management provider at SFHA properties must complete the following application steps.

### 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

- 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.

### 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. **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.

E. **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
- Certificate of IPM Certification: EcoWise Certified, Green Shield Certified or Green Pro.
- A copy of all applicable pest control licenses which will be used to complete the work of this contract: (Operator's license, Applicator's licenses and Field Representative licenses of all staff assigned to the contract)
- 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.

F. **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**

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



## Appendix D: Sample Communication Plan

Communication between residents, property managers, pest management specialists and staff working in areas impacted by pests is a critical component to any integrated pest management program. Empowering residents and staff to watch for and report any pest sightings or pest damage can greatly improve the effectiveness of monitoring programs and allow for a more rapid, better informed response to pest problems. Residents and staff impacted by pest problems are more likely to support the IPM program if they have the assurance of direct communication and rapid response.

The next sections describe the communication pathways for pest sightings, deficiency reporting and response by pest management specialists.

### Reporting Pest Sightings

Pest sightings should be reported by residents and staff in the pest sighting log book located in the property manager's office. This form specifies the exact location of the pest, type of pest and contact info for the person reporting to facilitate response by property management and pest management practitioners. Once a pest sighting is reported property management or staff should monitor the sighting location and evaluate the level of infestation. A unit inspection report should be completed to determine the underlying causes of the infestation. If necessary, property management should coordinate treatment services with a pest management professional (PMP).

### Reporting Deficiencies

Residents should be encouraged to report building deficiencies that are conducive to pest activity in the deficiency log book located in the property manager's office. This form specifies the deficiency, the location of the deficiency, the severity of the deficiency (low, moderate, high) and contact info for the person reporting. Deficiencies should be dealt with by property management and staff in a timely basis to prevent unit conditions conducive to pest activity.

### IPM Coordinator Response

Pest sightings, deficiency reports and unit inspection reports should be relayed to the IPM coordinator. Once a property manager or staff has evaluated the extent of the problem and found an infestation requiring treatment, then a recommendation should be made to the IPM coordinator to engage a pest management professional to evaluate and treat the problem as necessary. If an IPM coordinator has not been appointed, contracting with PMPs will be the responsibility of the property manager. If PMP services are necessary, then tenants should be given 48 hour notice of their arrival, and fully informed of the scope of work being performed. If multiple units need service, they should be scheduled together to cut down on service costs.



## Technician Responses

PMPs will generally respond to pest reports within a few days of receiving a request for service. During services the technician will monitor and evaluate the pest action level and determine the appropriate response including recommendations for resolving any deficiencies. The technician will also sign into the pest sighting log book to confirm treatment has been completed.

## Technician Report

PMPs will submit a report that includes any deficiencies observed and all actions taken by technicians to manage and monitor pests and pest activity. The report will also include the amount of pesticides used and the location where any pesticides were used to treat for pests. This allows SFHA to account for pesticide usage over time and to evaluate the effectiveness of the IPM program. Any materials used must be approved for use by the IPM policy and listed in the IPM plan. Structural deficiency reporting will also include a list of recommendations for resolving any deficiencies and will assign responsibility for fixing the problem to property management, staff or residents.

## Quality Assurance

The IPM coordinator or property manager should regularly check the pest sighting log book and deficiency log to determine pest problems are not growing unchecked. Each service ticket should also be reviewed for pesticide applications and PMP recommendations to enhance the effectiveness of the pest management program. During regular unit inspections pest infestations and observed structural deficiencies conducive to pests should also be documented along with traditional inspection criteria.

## **Pest Management Stakeholder Responsibilities**

### **Tenant**

#### **Responsibilities:**

- Report pest sightings to property manager or in the pest sighting log book in the management office
- Keep unit sanitation standards at required level
- Report unit conditions conducive to pest activity to property manager

### **Property Manager**

#### **Responsibilities:**

- Keep records of pest sightings in the Pest Sighting log book in the management office,
- Speak with tenants about pest sightings
- Inspect tenant units for conditions conducive to pests after pest sightings and annually.
- Report persistent pest problems to the IPM Coordinator.
- Coordinate pest management service visits with PMPs and the IPM coordinator
- Provide residents 48 hour notification of service visits
- Keep records of service visits in the management office with the pest sighting log

### **IPM Coordinator**

#### **Responsibilities:**

- Coordinate PMP visits with property managers
- Insure all services meet the requirements of the IPM Policy and IPM plan
- Maintain pest management service records and pesticide use records
- Coordinate annual inspections of all units for pest activity and conditions conducive to pests
- Coordinate with maintenance staff to provide repairs to severely infested units and at unit turnover
- Coordinate pest management training and education activities with tenants, property managers and staff

### **Pest Management Professionals**

#### **Responsibilities**

- Sign into the pest sighting log book to confirm treatment has been completed.
- Monitor and evaluate the pest action level and determine the appropriate response including recommendations for resolving any deficiencies
- Submit a report that includes any deficiencies observed and all actions taken by technicians to manage and monitor pests and pest activity.
- The report will also include the amount of pesticides used and the location where any pesticides were used to treat for pests.
- Reports will include a list of recommendations for resolving any deficiencies and will assign responsibility for fixing the problem to property management, staff or residents.

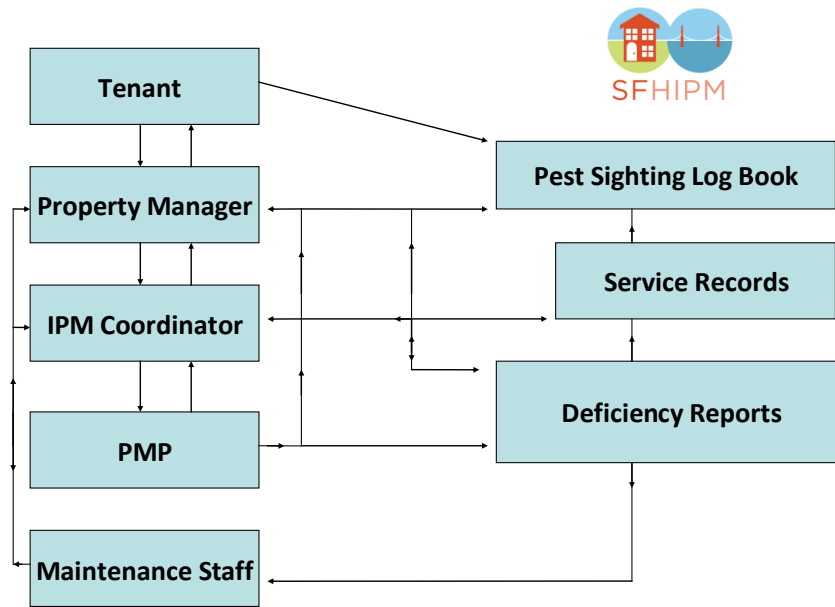
### **Maintenance Staff**

#### **Responsibilities**

- Report pest activity and building conditions conducive to pest activity
- Provide standard pest proofing repairs to heavily infested units and at unit turnover



➤ Learn IPM techniques for managing pests in structures



## Appendix E: Sample Pest Management Lease Addendum

Whereas, Resident and Agent desire to add the following terms and conditions to that certain lease dated \_\_\_\_\_, between \_\_\_\_\_ (“Resident”) and \_\_\_\_\_ (“Agent”), for the premises known as \_\_\_\_\_ (“Premises”).

Resident and Agent agree as follows:

1. If Resident fails to report any pest infestation and/or problems with the Premises within seven days of Move-In it shall be an acknowledgement by Resident that the Premises are acceptable, in good condition and pest free.
2. Resident and Agent agree that any violation of this Addendum constitutes a material violation of the Lease, and Agent may terminate Resident’s right to possession upon three days Notice to Quit, no right to cure. There is no requirement that Agent allow Resident to cure prior to serving Resident with a Notice to Quit. Proof of the violation of this Addendum shall be by a preponderance of the evidence.
3. Resident agrees to cooperate fully with and to undertake all efforts and tasks required by Agent, and in Agent’s sole discretion, or Agent’s pest management company employed to eradicate pests. Resident’s full cooperation includes but is not limited to immediately reporting pest infestation to the Agent, making the premises available for entry to complete pest inspection and eradication treatment(s), completing all required pre-treatment activities, evacuating the premises during and after treatment for the required time frame, completing all required post-treat activities, and immediately reporting ineffective treatment or re-infestations to the Agent in writing.
4. Resident may request reasonable extermination services at any time. All requests must be in writing. Agent will notify Resident in advance of each pest inspection, including providing a preparation sheet. Notification is presumed received if Agent hands the notice and instructions directly to Resident or if Agent posts the notice and instructions to Resident’s unit.
5. If Resident promptly notifies Agent and cooperates with Agent and/or Agent’s pest management company and the unit is either re-infected or the initial treatment is ineffective, Agent will promptly schedule re-inspection and re-treatment. If Resident fails to cooperate fully with the treatment plan, and the unit is either re-infected or the initial treatment is ineffective, Resident agrees to pay all costs of all subsequent treatments, as well as the cost of treatments for the spread of the infestation to additional units.
6. Agent, Agent’s employees, officers, directors are not liable to Resident for any damages caused by pests, including but not limited to, replacement of furniture, medications or medical expenses. Agent,

Agent’s employees, officers, directors, are not responsible for any damage done to Resident’s unit or personal items during pest control inspections or treatments.

7. Resident acknowledges that Agent’s adoption of this Addendum, and the efforts to provide a pest free environment, does not in any way change the standard of care that Agent owes Resident under the lease. Resident further acknowledges that Agent does not guaranty or warranty a pest free environment. Resident acknowledges and understands that Agent’s ability to police, monitor or enforce the agreements of the Addendum is dependent in significant part on Resident’s voluntary compliance and cooperation.

8. Resident acknowledges that the use of aerosol pesticide sprays and foggers is prohibited by the SFHA IPM Policy and agrees not to use aerosol pesticide sprays and foggers for personal pest control within SFHA units.

9. In case of any conflict between the provisions of the Lease and this Lease Addendum, the provisions of this Lease Addendum shall govern. This Lease Addendum is incorporated into the Lease executed or renewed between the Agent and the Resident.

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Agent for Owner Date Resident 1 - Date

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Resident 2 - Date

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Resident 3 - Date

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Resident 4 - Date

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Resident 5 - Date

#### DISCLOSURE

This community participates in an ongoing pest control program. Management discloses that at one time there may have been a pest infestation in or around the building. Management has addressed the pest infestation by participating in a pest control program, and will continue to provide pest control services pursuant to this Addendum.





## Appendix F: San Francisco Department of the Environment IPM Toolkit Guide

Pestec and the San Francisco Department of the Environment have developed an integrated pest management tool-kit for SFHA residents and staff to provide the tools and information necessary to implement IPM controls for pests in a DIY fashion. The tool-kit consists of monitoring devices, pest proofing and sanitation tools, and reduced-risk control options for the most common pests on-site. The kit also includes a guide on residential pest management that outlines IPM methods for controlling pests using the tools provided. The guide includes pest-fact sheets and information about the fundamentals of residential IPM in a multi-unit setting.

The Toolkit includes:

### **Sanitation Tools**

- A bucket
- borax (20 mule) 76oz box
- Rubber cleaning gloves
- large sponge
- scrubbing brushes
- biodegradable trash bags
- 8.5" Gong Brush
- Detergent Soap

### **Structural Repair Tools**

- Sealant/Caulking (acrylic with silicone)
- Steel Wool
- Screening

### **Pest Control Tools**

- Sticky insect traps
- Mice snap traps
- Terro Liquid ant bait
- Comabt Ant Gel
- Combat Ant Control Pack
- Comabt Roach Control Super

The following guide will provide steps for how you can use these tools to help prevent pest problems in your unit.

## Inspection

The first thing to do when dealing with pests is to figure out where pests are and what is keeping them alive. You should walk through your home and inspect every corner, paying particular attention to the kitchen and the bathroom where pests usually like to live. If there are areas that are difficult to see, use a flashlight to inspect dark areas.

### Start in your kitchen and look for the following problems

#### Look for waste and droppings:

- Cockroach droppings look like dark smudges with dark dots. Their egg cases are yellowish and ribbed, about the size of a small fingernail.
- Rodent droppings are brown, the size and shape of rice grains.

**Chew marks** in woodwork, along walls and on food containers. Mice are perpetually gnawing away at whatever they can.

**Gaps, cracks, holes and crevices** in walls, along baseboards and windows, around pipes, behind appliances, and around wires and drains.

- Cockroaches can squeeze through cracks as small as  $\frac{1}{8}$  of an inch.
- Mice can get through holes as small as  $\frac{1}{4}$  inch.

**Leaky faces and pipes** or leaks in ceilings and walls.

Once you have completed your inspection and found areas where pests may be hiding you can then take steps to eliminate their access to food, water and shelter.

## Step 1: Clean Up

To get rid of pests and keep them from coming back you should:

#### Reduce Clutter

- Recycle piles of newspapers, paper bags, cardboard and bottles, especially around stoves and refrigerators
- Store clothing and linens you don't use in sealed plastic bags or boxes.

#### Vacuum Thoroughly

- Use a vacuum with a hose and crevice tool
- Vacuum behind and under refrigerators and stoves
- Empty cabinets, throwing away old food and items with signs of pests
- Vacuum inside gaps and holes in walls and in and behind cabinets. Start high and work down
- When you are done, seal the vacuum bag and throw it out.

#### Wash Hard Surfaces

- Wear the yellow cleaning gloves that come with the tool kit
- Fill two buckets with warm water: one with mild soap or detergent, and one with plain water for rinsing
- Use the large sponge and scrubbing brush to scrub and rinse:
  - Countertops, tables, and surfaces where food is stored, prepared or eaten
  - Under the stovetop, inside burners and under and behind the stove, refrigerator, and dishwasher
  - Inside the rubber seal of the refrigerator door



- Inside drawers, cabinets, and shelves in the kitchen and bathroom
- Floors.

### **Clean Small Appliances**

Cockroaches like warm, dark places such as toasters, countertop grills, microwave ovens, and clocks.

- Unplug the appliances and vacuum them out.
- Clean appliances with detergent water and sponge

## **Step 2: Shut Pests Out**

Cockroaches and rodents can squeeze into your home through very small cracks and holes. To keep pests out for good, fill holes and seal cracks in walls, floors, woodwork, and around the tub, shower, and sink.

These repairs are easy to do. The materials are inexpensive and can be found at most hardware stores.

### **Seal Cracks and Small Holes**

- Seal narrow gaps with 100% silicone caulk. Caulk around bathtubs, showers, and sinks, where walls meet the floor, inside cabinets and where cabinets meet the wall.
- Paint over small cracks in the walls, floor, or woodwork with a water based latex paint.

### **Fill Larger Holes and Gaps**

- Stuff soapless steel wool or copper mesh inside holes before sealing. This keep rodents from chewing through.
- Use spackle or joint compound to fill gaps and holes that are too large to caulk. Do a little at a time, letting it dry in between applications

### **Close Gaps Under Doors and Around Windows**

- Attach door sweeps to the bottom of doors leading outside or to a building common space.
- Mend holes in screens by weaving in small pieces of screen. You can also use staples or duct tape to mend small cuts and tears.

### **Screen Bathroom and Kitchen Vents**

- Pests can enter through vents. Block their entry and keep air flowing through vents by using mesh screens, cut to size and placed under or over the vent cover. Secure the screen with caulk or a staple gun.

## **Step 3: Starve the beasts**

Like all creatures pests need food and water to survive

### **Pest Proof Your Food**

- Store all boxed or loose food in containers that seal tight - plastic, glass, or coffee cans with lids.
- Store as much food in your refrigerators as you can, especially foods you keep for a long time like flour, rice and nuts.
- To store large bags of pet food, use a metal garbage can with a lid.

### **Manage Your Garbage**

- Use garbage cans with tight-fitting lids (metal ones are the best) for garbage and recycling.
- Clean trash, recycling and compost bins regularly, inside and out.
- Take out your garbage daily.

### **Put Food Away at Night**

- Wash down dishes.





- Wipe down the stovetop, counters, and tables.
- Sweep up or vacuum away food on the floor.
- Don't leave pet food out overnight.

### **Remove Water Sources**

- Fix leaky faucets by replacing washers.
- Have a plumber fix leaks as soon as possible.
- Use your bathroom window or fan to vent steam after showers and baths to prevent mildew and mold. Report broken vents to your property manager.
- If possible, close off drains in showers, bathtubs and sinks when not in use. You can use inexpensive rubber drain covers or metal drain screens.

## **Step 4: Using Pest Control Products**

Pesticides are poisons. Some of the properties that make them hazardous to pests also make them potentially dangerous to people and pets. Use pesticides carefully.

- Avoid the use of sprays, foggers and bug bombs.
- Never purchase or use a product without a manufacturer's label and never buy pesticides from street vendors.
- Never use products called Chinese Chalk, Tres Pasitos, or Tempo.
- Use the smallest amount that will be effective.
- Always follow the label. Never use a product for an insect not mentioned on the label.
- Store chemicals safely and in a place where children and pets can not get to them.

### **Cockroaches**

#### *Gel Baits*

- Gel baits do not kill pests right away, but are very effective. Pests eat them and die slowly, after they go back to their nests. Once a cockroach returns other cockroaches will eat them and the bait will be passed along to other cockroaches.
- Squeeze pea sized dabs of gel every foot or so along crevices, cabinet shelves, and baseboards. Reapply after cockroaches eat it.
- Insert gels into cracks and crevices before sealing them up

#### *Sticky traps and bait stations*

- Peel off the stick tape in the bottom of the bait station or trap before pressing it to surfaces
- Place the bait or stick trap where cockroaches travel - along edges, in crevices and corners, and inside, under and behind cabinets, appliances, and sinks.
- Replace bait stations every two to three months. Change brands or types each year. Replace sticky traps every 2 weeks or more often if they fill up.

### **Mice**

#### *Trapping*

- Follow directions for trapping mice as they are listed on the package.
- Place traps out of reach of children and pets.
- Check the traps daily and dispose mice in sealed plastic bags.
- Keep replacing the traps until you do not catch anything for at least one week.



## Appendix G: San Francisco Multi-Family Housing Pest Proofing Guidelines

Pest problems are typically viewed as a one time problem that need a one time solution or a chronic problem that require on-going pesticide applications to “keep pests under control.” A better understanding of what pests are reveals another view: pests are the *inevitable* unwanted living things that make use of the resources we provide them in and around our communities. They are an outcome of conditions that support them, or a symptom of a larger underlying problem. Those larger “problems” can sometimes be obvious, other times the underlying problems causing pests in a home are difficult to diagnose, or are so common that they become invisible to residents, maintenance people and even pest control workers.

This brief guideline for pest prevention in San Francisco multi-family housing communities will identify the specific “structural” causes of common pest problems and strategies for correcting them. 4 principles guide these pest proofing guidelines. These pest prevention tactics are designed to:

- Reduce access into and through housing units
- Eliminate pest harborage and shelter
- Minimize moisture in housing units and
- Use durable pest resistant materials to promote the longevity of these pest proofing tactics

The goal of these pest proofing practices is to:

- isolate units from adjoining units;
- identify small changes to building maintenance and unit turnovers to improve pest prevention at the lowest cost;
- identify tools that tenants and turnover staff can utilize to exclude and prevent pests, and
- identify pest management interventions that should be utilized by contracted pest control operators.

Units should be pest proofed at unit turnover and pest proofing should be considered for focus units where infestations are ongoing. The pest proofing tactics are organized by area and list common deficiencies, remedies and necessary materials. Material costs and estimated labor time are also included below.

### Structural Deficiencies and Pest Proofing by Area

#### Kitchen

**Area:** cabinets

**Structural deficiency:** crevices at wall junctions, in between cabinets, and around cabinet trims at wall.

**Proofing Standard:** Seal all gaps around cabinetry with sealant.

**Materials:** Caulking backer rod and [DAP 230 Premium Indoor/Outdoor Sealant](#).

**Area:** wall/floor junction

**Structural deficiency:** wall terminates above floor covering leaving a crevice that enters the floor and wall voids.<sup>6</sup>

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<sup>6</sup> **Floor/wall junction.** \*\* This is primarily a problem upstairs where cove baseboards are hiding the gaps but not sealing out pests. This deficiency will severely aggravate bed bug infestations allowing them to disperse throughout the building and into adjoining units.

**Proofing Standard:** seal gap between wall and floor prior to installing baseboards.

**Materials:** caulking backer rod and [OSI GreenSeries SC-175 Draft & Acoustical Sounds Sealant](#)

**Area:** cabinet kickplates

**Structural deficiency:** cracks and crevices around kickplate at floor and cabinet. The kickplate creates a void under the cabinet that can be utilized by cockroaches and mice.

**Proofing Standard:** seal crevices around kickplates.

**Materials:** DAP 230 sealant and for larger structural gaps hardware cloth or sheet metal.

**Area:** sink back splash

**Structural deficiency:** gap at top edge along wall.

**Proofing Standard:** seal with water resistant sealant.

**Materials:** DAP 230 sealant and caulking backer rod for gaps larger than ¼ inch.

**Area:** stove gas line penetration

**Structural deficiency:** gaps around gas line penetration.

**Proofing Standard:** seal around gas line with sealant and install escutcheon plate.

**Materials:** DAP 230 sealant and [two-piece escutcheon plate](#).

**Area:** radiator pipe penetration

**Structural deficiency:** gap around pipe penetration in wall or floor.

**Proofing Standard:** seal around pipe with rodent resistant material and install escutcheon plate.

**Materials:** copper wool and two-piece escutcheon plate.

**Area:** ventilation hood

**Structural deficiency:** gaps around edges, built in chases for vent pipe to roof.

**Proofing Standard:** seal at edges and build chases that can be opened for inspection and treatment.

**Materials:** DAP 230

**Area:** under sink basin

**Structural deficiency:** gaps in construction. Units with no cabinet beneath the sink are better than wood cabinets with many edges and gaps.

**Proofing Standard:** seal all gaps around cabinetry with sealant.

**Materials:** caulking backer rod and [DAP 230 Premium Indoor/Outdoor Sealant](#).

## Bathroom:

**Area:** shower

**Structural deficiency:** gaps around basin and wall penetrations

**Proofing Standard:** seal

**Materials:** DAP 230

**Area:** tub

**Structural deficiency:** gaps and worn caulking

**Proofing Standard:** use sealant or replace with tile or other non-porous surfaces.

**Materials:** DAP 230

**Area:** at wall/floor junction

**Structural deficiency:** wall terminates above floor covering leaving a crevice that enters the floor and wall voids.

**Proofing Standard:** seal gap between wall and floor prior to installing baseboards.

**Materials:** caulking backer rod and [OSI GreenSeries SC-175 Draft & Acoustical Sounds Sealant](#)

**Area:** cabinet

**Structural deficiency:** crevices at wall junctions and around cabinet trims at wall.

**Proofing Standard:** seal all gaps around cabinetry with sealant.

**Materials:** caulking backer rod and [DAP 230 Premium Indoor/Outdoor Sealant](#).

**Area:** under sink at wall penetration

**Structural deficiency:** gaps in construction. Units with no cabinet beneath the sink are better than wood cabinets with many edges and gaps.

**Proofing Standard:** seal all gaps around cabinetry with sealant.

**Materials:** caulking backer rod and [DAP 230 Premium Indoor/Outdoor Sealant](#).

**Area:** decorative chair rail (molding)

**Structural deficiency:** gaps at edges and sides.

**Proofing Standard:** seal before painting with sealant. Paint over when finished.

**Materials:** DAP 230 and paint.

**Area:** toilet

**Structural deficiency:** gaps at edges and sides.

**Proofing Standard:** seal crevices

**Materials:** DAP 230

**Area:** wall penetrations/ water lines

**Structural deficiency:** gaps around plumbing fixtures and wall penetrations

**Proofing Standard:** seal gaps and crevices to avoid pathways for pests

**Materials:** DAP 230

## Living room

**Area:** radiator

**Structural deficiency:** gap in pipe penetration is wall of floor

**Proofing Standard:** seal around pipe with rodent resistant material and install escutcheon plate.

**Materials:** copper wool or [Xcluder](#) and two-piece escutcheon plate.

**Area:** void under staircase

**Structural deficiency:** Void space create pest harborage.

**Proofing Standard:** Create hatch cover or fill void and seal.

**Materials:** [Blown in insulation treated with borates](#) or [other injectable insulation](#), and/or sealing wall penetrations and treating void with inorganic insecticide dust.

**Area:** crawl space

**Structural deficiency:** Openings in ventilation screens or utility doors.

**Proofing Standard:** Install vandalism resistant screens and weather stripping around utility doors.

**Materials:** Welded stainless steel 1/4" screens, and weather stripping preferably wood or metal.

## General:

**Area:** floor/wall/ceiling junctions

**Structural deficiency:** gaps and crevices at junctions

**Proofing Standard:** seal gaps and crevices and pain

**Materials:** DAP 230



**Area:** molding

**Structural deficiency:** Gaps at edges and sides.

**Proofing Standard:** Seal before painting with sealant. Paint over when finished.

**Materials:** DAP 230 and paint.

**Area:** baseboards

**Structural deficiency:** loose baseboards and gaps between wall and floor

**Proofing Standard:** Seal gap between wall and floor prior to installing baseboards.

**Materials:** Caulking backer rod and [OSI GreenSeries SC-175 Draft & Acoustical Sounds Sealant](#)

## Material Costs for Proofing

**Draft & Acoustical Sound Sealant:** For 200-400 ft the cost is approximately [\\$78](#) not including shipping. Carried locally at Whitecaps Industrial Supply in San Francisco, very close to Alice Griffith.

**Caulking Back Rod** to reduce amount the of sealant used. Cost for 200-400ft is approximately [\\$60](#) not including shipping. Caulking back rods can be found at Ace Hardware and Tru-value in San Francisco.

**Water, gas, drain penetrations and surface to surface adhesion/sealing:** DAP 230 to seal:

- two sink drains
- two sink water lines
- stove gas line
- toilet water lines
- the tub and shower penetrations and tub/wall junctions
- kitchen cabinets,
- door and
- trim molding

These fixes require approximately 450 linear feet of sealant. This requires no more than 10 cartridges of sealant. \$3 each and a 12 pack of cartridges costs approximately \$30. Sealant can be purchased from local hardware stores.

**Copper wool or [xcluder](#) material:** 400 ft roll = \$149 online, one foot section per radiator penetration.

**[Ecutcheon plates:](#)** Price ranges and will be better locally. Approximately \$8 online for heavy duty kind.

## Labor Time for Unit Pest Proofing:

The labor required to pest proof a unit using the tactics described above should take two workers approximately 1 hour. The amount of time required to pest proof a unit will decrease with practice and repetition. Combining pest proofing with regular unit-turnover protocols should also decrease the time and cost of implementing these recommendations.



## Appendix H: Alice Griffith Integrated Pest Management Physical Assessment

### Methodology of the Assessment

The IPM Physical Assessment consisted of:

1. An IPM inspection. The IPM inspection included placing and retrieving glue traps to determine whether an infestation exists, inspection for evidence of infestations, identification of opportunities to seal pest entry points, and identification of opportunities to make structural and cultural changes to discourage pests from entering the building.
2. The visits included an evaluation of pest management practices and identified opportunities to incorporate IPM principles into the property's pest management approach.
3. Pestec also assessed the educational needs of Alice Griffith's property management, tenants and staff in terms of IPM and pesticide safety.

### Deliverables from the Assessment

1. A physical inspection report describing results of glue traps from units and common areas; describing results of inspection of 11% of units including those with infestations based on glue traps giving a clear assessment of pest populations on-site, density of infestations, type of infestations, breadth of infestations; detailing initial and ongoing corrective measures for infestations and measures to prevent future infestations based on IPM principles; estimating cost of corrective measures.
2. A program management assessment to evaluate the current approach used by the property manager to prevent and respond to infestations; commentary on existing strategies and deficiencies; and recommendations to improve program management.
3. An educational evaluation about current familiarity with pest management safety and integrated pest management methods.

## Introduction

Alice Griffith consists of 256 units of multi-family public housing in San Francisco's southeast sector. The following report is the result of an integrated pest management (IPM) assessment Pestec completed at Alice Griffith in the spring of 2012. Pestec inspected the physical condition of a cross-section of units at the housing complex to evaluate the current pest management conditions on-site, and to assess the educational needs of Alice Griffith property management, tenants and staff in terms of IPM and pesticide safety. The inspections and follow up visits occurred over a period of one month from March 6th, 2012 to April 5th, 2012.

The scope of work for the IPM assessment included:

1. Discussions with the property manager regarding property concerns and configuration.
2. A review of current pest control methods and processes.
3. Management notification of pest inspection access requirements.
4. An initial inspection of 11% of units (29 total) detailing any evidence of pest activity or conditions conducive to pest life observed, any pest management actions observed, and the placement of pest monitoring devices in pest prone areas. When possible, Pestec met with tenants to discuss the goals of the assessment, their familiarity with pest problems on site and whether or not they were self treating their units.
5. A return visit to collect pest monitoring data and observe any property condition changes.

**Attachment 1: Alice Griffith Physical Assessment Data** provides a list of each unit inspected and includes the following information:

- The date of the first inspection
- Any pest activity observed
- The locations in each unit where monitors were placed
- Any pest prone conditions observed
- Any pest management actions observed
- The date of the second visit
- Pest activity and population numbers discovered in monitoring devices after the second visit
- A letter grade based on the condition of the unit and any pest activity observed (Pest population numbers all refer to cockroach populations).

In each unit Pestec visually inspected and set monitoring devices (glue traps: 3-6 per unit, based on unit size). Traps were set in bathrooms, living rooms, bedrooms and kitchens using glue traps pursuant to industry standards and the National Center for Healthy Housing guidance document (Attachment B). The inspections were completed by two Pestec technicians properly licensed by the California Structural Pest Control Board. One of the technicians was also an EcoWise Certified Integrated Pest Management Practitioner.

## Inspection Results

After the initial inspection and secondary visit to gather pest monitoring data, each unit was given a letter grade based on the pest activity observed and structural and sanitation conditions conducive to pest life. The results are listed below:



- Five units received an **A grade** for the condition of the unit (136 Cameron, 46 Cameron, 29 Nichols, 32 Cameron, 74 Nichols). No pest activity was observed in these units and structural deficiencies were minimal or non-existent.
- Four units received a **B grade** (60 Cameron, 48 Cameron, 31 Nichols, 1009 Fitzgerald). Units received a B grade if pest activity was observed on the first or second visit, or if there were conditions in the unit conducive to pest activity: improperly sealed pipe conduits under kitchen or bathroom sinks, food residue present in kitchens, or clutter providing harborage for pests.
- Two units received a **C grade** (200 Cameron, 106 Cameron), and were found to have moderate cockroach infestations and/or severe conditions present conducive to pest life, including: deterioration of walls, holes and gaps, roach droppings present, food residue present, poor sanitation, food stored out on counter or dining table, or gaps behind bathroom and kitchen sinks where roaches nest, or pipe conduits in bathrooms and kitchens in need of sealing.
- Five units received a **D grade** (156 Cameron, 76 Cameron, 25 Nichols, 79 Nichols, 68 Nichols). In these units large infestations (33 to 97 roaches observed in monitors) were discovered *and* severe conditions conducive to pest activity were present (e.g. an water leak in 79 Nichols).
- Eight units received an **F grade**. These units had severe roach infestations (between 244 and 899+ cockroaches observed in monitoring devices) and severe conditions conducive to pest activity. One of these units is an outlier however. 23 Nichols is well kept, very clean and neat, however during the second visit a large roach population was discovered in the monitoring devices. The level of sanitation observed in 23 Nichols is ideal for pest prevention; however, structural deficiencies in the unit have allowed cockroaches from neighboring 21 Nichols to enter the unit. 21 Nichols has a heavy infestation throughout. Presumably the infestation in 23 Nichols is directly related to the problems in 21 Nichols and access cockroaches enjoy between the two units.
- Pestec was unable to gain access to two units for inspections after multiple attempts (39 Cameron, 49 Cameron). This provides an important data point for the purposes of this assessment. Sometimes gaining access to units in multi-family housing is difficult. It is important to coordinate pest control inspection appointments with residents and management to ensure access to units where pests may be a problem. Pestec made inspection *attempts* 24 times for multiple units over the course of this assessment. The cost of *attempted* inspection visits totaled \$510 over the course of this assessment.

The data from these inspections provides a snapshot of unit conditions at Alice Griffith. Units similar to those with an F grade pose the biggest risk of continued pest infestations at Alice Griffith. These units are ideal harborage areas for cockroaches, mice and other pests and without structural repairs and improved sanitation these units will continue to act as pest incubation centers causing undue harm to tenants and neighboring occupants.

During an inspection of the building exterior Pestec observed conditions conducive to pest activity including: trash around the exterior, including used diapers; also piles of discarded materials in front of buildings and trash in the back of buildings. Previously completed pigeon proofing work was also proving ineffective and pigeons were fond of roosting on security lights on housing exteriors.



## Pest Management Actions Observed

During the IPM assessment Pestec also documented any pest management actions observed. This information was gathered through tenant interviews and observation. Pest management actions observed include the presence or use of any “over the counter” pest remedies such as commercial spray cans and foggers, and any reduced risk pest control options including containerized cockroach baits, and the use of borax soap in cracks and crevices. Tenants also reported using cleaning materials to control roach infestations such as ammonia and laundry detergent. The use of traditional over the counter pest remedies like aerosol sprays and foggers pose a risk to human health at Alice Griffith. Exposure to pesticides can lead to symptoms such as difficulty breathing, blurred vision, eye irritation, nausea or vomiting, skin irritation, headaches, and dizziness. Children are also at risk of becoming asthmatic or may have allergic reactions from pesticide exposure. Cockroaches are also known asthma triggers and ineffective management using aerosol sprays and foggers can compound detrimental health risks.

**Note on asthma:** Two tenants reported children with asthma. One unit was well kept with no observed cockroach activity and the tenant chooses not to use aerosol sprays, foggers or baits for control as a precaution against adverse health effects for her daughter. The other unit had various sanitation and structural issues and the tenant reported using aerosol sprays and foggers with little success.

## Current Pest Management Practices

SFHA does not currently have a blanket contract for pest control services. Property managers select services from a variety of pest control providers on an as needed basis. Smaller pest management projects do not have to go out to bid. Service records are kept by property managers and do include inspection reports, records of any pest management actions taken and recommendations to further resolve the problem. During unit turnover, maintenance teams prepare units for occupancy by providing structural repairs and thoroughly cleaning the unit. Units are inspected annually for building deficiencies and lease violations.



## Appendix I: Monitoring Forms and Fact Sheets

- **San Francisco Housing Authority Pest Management Deficiency Inspection Checklist**
- **Roach Trap Monitoring Form**
- **SFHA Pest Sighting Log Book**
- **SFHA Deficiency Report Form**
- **Simple Ways to Avoid Moving Pests with You on Moving Day**
- **Bed Bug FAQ**
- **UC IPM Quick Tip Fact Sheet: Ants**
- **UC IPM Quick Tip Fact Sheet: Cockroaches**
- **UC IPM Quick Tip Fact Sheet: Bed Bugs**
- **UC IPM Quick Tip Fact Sheet: House Mouse**
- **New York Department of Health and Mental Hygiene: Stop Bed Bugs Safely**

## San Francisco Housing Authority Pest Management Deficiency Inspection Checklist

Unit #: \_\_\_\_\_ Date: \_\_\_\_\_ Inspected By: \_\_\_\_\_

Area	Subarea	Sealed	Deficient	Comment
Kitchen Sink				
	Escutcheon plates			
Stove				
	Gas line			
Counter top				
	Back splash			
	Front edge			
Cabinets				
	At wall			
	At stove			
	At ends			
Hanging Cabinets				
	At bottom			
	At stove hood			
	At shelves			
	At top			
	At sides			
Floor Cabinets				
	inside shelves			
	inside at counter			
	at floor			
	at kickplate			



<b>Bathroom</b>		<b>Sealed</b>	<b>Deficient</b>	<b>Comments</b>
Tub molding				
Sink Molding				
Toilet Molding				
Sides and wall				
Floor				
Medicine cabinet				
<b>General</b>				
Molding				
Door hinges				
Windows				
Baseboards				
Radiators				
Pipes				
Cover Plates				
Outlets				
Door sweeps				



## Roach Trap Monitoring Form

SFHA Community: \_\_\_\_\_

Name of Person Monitoring: \_\_\_\_\_

Unit #	Date Trap Set	Date Trap Read	Trap missing?	Trap Location Description	Nymphs Observed	Adults Observed	Total	Pest Management Actions/Recommendations



<b>Unit #</b>	<b>Date Trap Set</b>	<b>Date Trap Read</b>	<b>Trap missing?</b>	<b>Trap Location Description</b>	<b>Nymphs Observed</b>	<b>Adults Observed</b>	<b>Total</b>	<b>Pest Management Actions/Recommendations</b>



## SFHA Pest Sighting Log Book

SFHA Community: \_\_\_\_\_

Property Manager: \_\_\_\_\_

	Date Sited	Pest Type	Exact Location of Pest Sighting	Name and Unit # of Person Reporting	Date of Response	Contractor Name	Time In	Time Out
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								
11.								
12.								
13.								
14.								
15.								
16.								

**SFHA Deficiency Reporting**

SFHA Community: \_\_\_\_\_

Property Manager: \_\_\_\_\_



	Date	Deficiency	Location	Severity (low, medium high)	Contact	Date Remedied	Staff Sign Off
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							





## Simple Ways to Avoid Moving Pests with You on Moving Day

**Inspect** all of your belongings before you pack them to make sure you are not bringing any pests with you. Use a flashlight to inspect areas that are hard to see. Pests like hiding in dark spaces and can easily join you on your moving day if you do not get rid of them.

**Clean** your furniture, appliances and clothes before you pack to make sure you do not take any “hitch-hiker” pests with you. Make sure to pack clothes in clear plastic bags. Everything that cannot be laundered should be examined very closely for bugs and then packed away in plastic bags labeled “Laundry”. Books, picture frames, small appliances, trinkets or decorations – anything at all that pests can live in should also be cleaned and inspected.

**Pack** your belongings using new packing material whenever possible. If you use boxes that have been used by others, first inspect them carefully for bugs. If you use blankets to wrap some furniture make sure the blankets have been cleaned or sanitized first. Items that can be packed in clear plastic trash bags should be cleaned first and labeled “CLEAN”. If the items are already clean just run them through the dryer for 20 minutes. It is the hot setting in the dryer that will kill the bugs. If you are using a moving company, ask them how they prevent pests and inspect the moving truck for any pests as well.

When **Moving Day** finally does come around, there are some additional precautions that you need to take to be sure that you leave any pests behind. Make sure to empty all of your furniture: tables, cabinets, dressers – anything that has space to store things inside of it. Also remove all the drawers from any furnishings that have them. Take all the cushions off your couches and chairs. Once the furniture is as bare and empty as you can get it, inspect it thoroughly for pests.

**Moving in:** Inspect your new home for pest activity and look for any problems that might allow pests into and through your unit. You should also check to make sure the plumbing is properly sealed in the kitchen and bathrooms. Cockroaches love moisture, so improperly sealed pipes will attract pests. Also make sure the unit is clean and free of any food residue or trash. If you encounter any problems in your new unit make sure to submit the problems *in writing* to your new property manager to let them know.

## BED BUG FAQ

### What are bed bugs and what do they look like?

Adults are reddish-brown in color and larva or nymphs are a clear-yellowish color, but when they feed, their bodies swell and become bright red. They can be found in homes, apartments, hotels, hospitals, nursing homes and other dwellings. Bed bugs feed primarily on human blood and they usually feed at night. They can go weeks, even months, without feeding. Bed bugs do not transmit disease, but their bites can cause itchy welts that if scratched too much, can bleed and become infected.



### Where do bed bugs live and hide?

Bed bugs are most commonly found in sleeping, resting, and sitting areas of homes, such as in bed mattresses/box springs, bed linens, and in the cracks and crevices of bedroom furniture. Bed bugs also hide in other rooms, in such places like couch cushions, other household furniture, wall hangings, within 10-20 ft of places where people sleep, rest, and/or sit.

### Why are bed bugs a problem? Are they dangerous?

Bed bugs may be a nuisance to people, but they are not considered a major public health threat because they do not transmit disease. Despite this, bed bugs are a nuisance and their bites can lead to itchy welts that can cause discomfort. In addition, they can lead to sleep deprivation, anxiety, stress, and psychological issues.

### What are the signs of bed bug infestation?

If you have bed bugs, you may notice itchy welts (raised red bumps or flat welts) on your skin. You may also see the bed bugs themselves; small bloodstains from crushed bed bugs; or dark spots from bed bug fecal droppings in, on, and around the following places in your home:

- Seams or creases of mattresses or box-springs.
- Around bed frames and headboards.
- In and under furniture (chairs, couches, beds, night-stand, chest-of-drawers, etc.).
- Between couch cushions. Under rugs and the edge of carpets.
- Between curtain folds.
- Behind electrical plates/covers, under loose wallpaper, and behind wall hangings.
- In telephones, radios, TVs, clocks, and other electronic devices.
- In, under, and around floor clutter.

Once in the home, bed bugs are mostly found in rooms where people sleep, rest, sit, or lay for extended periods of time.

### How does a home become infested with bed bugs?

Bed bugs are great “hitchhikers” and can be transported from an infested area to a non-infested area by clinging onto someone’s clothing or they can crawl into luggage, furniture or bedding that is then brought into the home. Bed bugs can be picked up while spending time in a home that is infested with bed bugs, or while traveling and staying in a hotel or motel room infested with bed bugs. If you live in a multi-unit housing complex, such as an apartment building, it is possible for bed bugs to get into your home from your neighbor’s residence. Bed bugs can travel through wall voids and along pipes, wires and cracks in the wall. If you live in a multi-unit housing complex and you discover a bed bug infestation, it is important to report it to your landlord promptly. Anyone can get bed bugs. An infestation has nothing to do with how clean and tidy a person keeps their home. A bed bug infestation is not something to be ashamed of or feel embarrassed about.

So if you are dealing with a bed bug infestation, it is important to let anyone that may visit your home know, so they can take the necessary steps to prevent taking bed bugs home with them.

## How can I prevent a bed bug infestation?

While there is no way to completely prevent a bed bug infestation, there are steps you can take to avoid an infestation or detect one sooner. For example:

- Inspect all furniture (especially used furniture) that is brought into your home. Do not take furniture left on the street, even if it looks like it is in great condition.
- If visiting a place where a bed bug infestation is suspected, clothing should be changed as soon as possible after leaving the site, and the potentially infested clothing should be placed in a plastic bag until it can be laundered in hot water and dried on high heat.

## How do you get rid of bed bugs?

Getting rid of bed bugs can be costly and difficult because they are small, elusive, transient, and nocturnal. Bed bugs are hardy and can live for months without feeding, and can withstand a wide range of temperatures from nearly freezing to more than 112 degrees Fahrenheit.

An experienced professional pest control company will know where to look to detect bed bugs in their many hiding places, and has the special tools, equipment, insecticides, and know-how to completely eliminate them from your home.

## What should tenants do if they discover bed bugs in their home?

Tenants should contact their landlord or property manager promptly to report a bed bug infestation. The sooner everyone responds, the more successful removal will be. Discuss respective responsibilities regarding the infestation and come to an agreement on a plan to manage the infestation. If there is an infestation, hiring a licensed pest control company to control and eliminate the bed bug infestation is recommended. The pest control company should provide you with a plan that will include the methods and insecticides to be used, and describe the efforts expected by the landlord or manager, and the tenants. Follow any instructions given by the pest control company.

## Inspecting for Bed Bugs

Begin by cleaning up any floor clutter. Look for bed bugs, blood stains, droppings, and eggs. Inspect the following areas: mattresses, box springs, bed frames, headboards, bedding, bedroom furniture (look inside



drawers), and any other furniture (couches, etc.). Also, inspect cracks, behind torn or peeled back wallpaper; behind picture frames and other wall hangings; behind outlet and light-switch covers, and inspect curtains and blinds.

Bed bugs are small and thin and can hide in the smallest of places. To force bed bugs out of cracks and crevices where they may be hiding, use a small putty knife or playing card, or a hair-dryer on low setting. If bed bugs do come out, catch and kill them. Crush them using a paper towel and throw them away outside in the trash can.

## **Cleaning and Disinfecting to Get Rid of Bed Bugs**

Targeted cleaning and disinfecting will help to reduce bed bugs and keep them from spreading, but it may not get rid of them completely. That is why it is recommended to employ the services of a professional pest control company. However, your own efforts to clean and disinfect can help a lot in reducing and controlling the spread of bed bugs in your home.

Enclose infested mattresses. You may need to get rid of heavily infested items. Use garbage bags or plastic shrink wrap to seal and throw away such items. Label items to be thrown away as “infested with bed bugs”. This will discourage another person from taking these items.