

## Managing pests in affordable housing

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[@StopPests](https://twitter.com/StopPests)
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## What position do you have on the IPM team?

Please tell us your  
Name  
Job or Role

If you want, tell us  
A pest management question you have or  
A pest management topic you hope we will  
cover today



## Cannot ignore the issue



**The Bedbug Registry**

The Bed Bug Registry is a free, public database of user-submitted bed bug reports from across the United States and Canada. Through 2010, the site has collected about 20,000 reports covering 12,000 locations.

You can find us on Twitter as [@BedBugRegistry](#)

**NEW!** Report bedbugs on [crackmap.org](#)  
Search coming soon.

**NEW!** Report bedbugs on [crackmap.org](#)  
Search coming soon.


Check For / Report Bugs:

Home name:  Street Address:

City and state:  City and State:

Check Here!  Check Address:

Combat:  Lavace:



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11,233 people like this. Be the first of your friends.

news releases

**FOR IMMEDIATE RELEASE**  
January 21, 2011

**DEP ISSUES MAJOR PENALTY AND SEIZES LICENSE REVOCATION OF INSECTICIDE FIRM FOR IMPROPER BEDBUG SPRAYING**

**(11/012) TRENTON**—An \$86,000 penalty was imposed today by the Department of Environmental Protection on Top Pest Control of Newark for misapplication of hazardous pesticides in residential pest control bedbug spraying. Commissioner Bob Franks announced.

The DEP is seeking permanent revocation of TPC's pesticide business license and revocation of individual applicator licenses for the company's responsible pesticide applicator James Gallo and company owner James Farmer. The DEP also has charged TPC \$10,025 for the cost of DEP chemical sampling in the matter, and fined a \$10,000 penalty against TPC corporate officer Hector Braga for an applicator licensing violation.

## Should not ignore the issue

FOR THE WELL-CONNECTED FASHIONISTA

**City Room**

May 11, 2011, 5:58 PM

**Cockroaches May Help Explain Asthma Outbreaks**  
by NICHOLE WARDROUGHS

Sometimes, Kalaikoaque reactions of dead and dying toward someone like cockroaches are scientifically justified.

At least that is one possible spin on a new study by [Columbia University Mailman School of Public Health](#) that finds that higher exposure to cockroach dust may explain why some New York City children have asthma while others, who grow up just blocks away, do not.

The researchers cultured dust—containing cockroach, mouse and cat allergens—from the upper half of the

**SCIENTIFIC AMERICAN**

Member of the 2011 National Magazine Award for General Excellence

**Genetics Explain How Bedbugs Infest a Building—or a Country**

New genetic profiles of bedbugs help to explain how they have spread, and how bioengineering has helped them flourish.

By Katherine Harmon | December 7, 2011

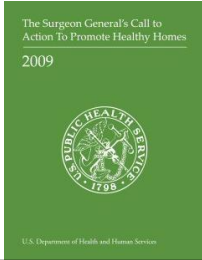
12 Share | Email | Print

**PHILADELPHIA**—When you have bedbugs (*Cimex lectularius*), less interesting is the question of how they got there than the conundrum of how best to get them out. Ridding homes and businesses of these pests has become a multimillion-dollar industry in many cities in the U.S. and throughout the world.

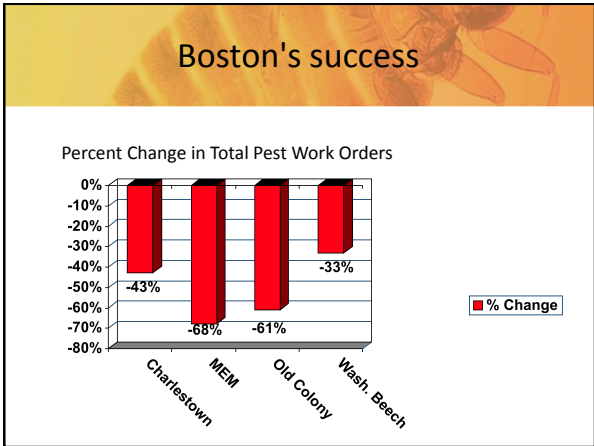


## Making homes healthy

- IPM is part of a nationwide Healthy Homes movement to reduce housing-based health hazards
- A healthy home is:
  - Dry
  - Clean
  - Ventilated
  - Safe
  - Contaminant-free
  - Maintained
  - **Pest-free**



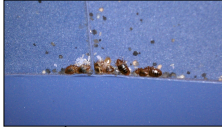


The Surgeon General's Call to Action To Promote Healthy Homes  
2009  
U.S. Department of Health and Human Services



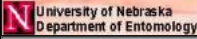
## Priority pests

- Cockroaches cause asthma in infants, trigger asthma attacks, and contaminate food
- Rodents such as mice and rats carry diseases, bite, destroy property, may cause fires, and may trigger asthma attacks
- Bed Bugs and their bites are a nuisance and are expensive to eliminate

## You are a cockroach.




 University of Nebraska  
Department of Entomology



### What all pests need

- Food
- Water
- Shelter

10

A slide with a yellow and orange background featuring a faint image of a fly. The title is "What all pests need". Below the title is a bulleted list: "• Food", "• Water", and "• Shelter". To the right of the list is a simple wooden stool with three legs. Each leg is labeled vertically: the left leg is "Water", the middle leg is "Food", and the right leg is "Shelter". The number "10" is at the bottom right of the slide.

### Every infestation starts with an introduction

A slide with a yellow and orange background featuring a faint image of a fly. The title is "Every infestation starts with an introduction". Below the title are two images. The left image shows a white PVC pipe with a hole in the wall, likely a pest entry point. The right image shows a pile of trash and debris outdoors on a paved area, representing a source of introduction.

Pest management in multifamily housing must include managing introductions

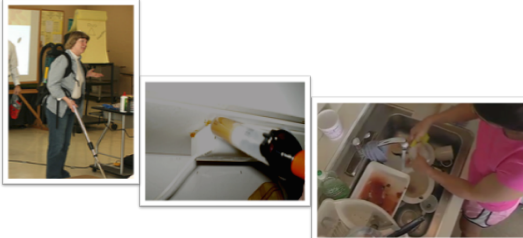


Find pests that get in before an infestation grows



Get rid of pests using more than one control method

Methods must be economical and pose the least possible risk to people, property, and the environment



Integrated Pest Management (IPM)

1. Inspect and monitor
2. Identify
3. Determine the scale of response
4. Respond
  - Non-chemical control
  - Changing people's behavior
  - Chemical control
  - Biological control
5. Evaluate effectiveness



**IPM is not...**

- Using only bait
- Applying more than one kind of pesticide
- A certain set of pesticides
- Using spices and herbs
- A service that can be contracted out


**IPM is a team approach**

<b>Job</b>	<b>Responsibility</b>
<ol style="list-style-type: none"> <li>1. Preventing pests</li> <li>2. Finding introductions</li> <li>3. Taking control</li> <li>4. Monitoring success</li> </ol>	

**Questions?**

**What is a bed bug?**

- ✦ A blood-sucking insect
- ✦ Flat
- ✦ Range in size from a sesame seed to a apple seed
- ✦ Light brown to mahogany red depending when they last fed



**Adult bed bug feeding on a human**

### Why they're back

- ✦ Change in pesticide availability
- ✦ Change in pesticide use patterns
- ✦ More travel/ mobility of people
- ✦ More infested locations
- ✦ Pesticide resistance
- ✦ Lack of preparedness of society in general


### Bed bugs are health hazards

Bed bugs do not transmit disease, but they are a pest of significant public health importance


- ✦ Cause secondary infections after people scratch their bed bug bites
- ✦ Result in stress, loss of work, loss of productivity, loss of sleep, and financial burden
- ✦ Are unwelcome in our homes and workplaces

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### Bed bug life cycle



Fed



Unfed

### Bed bug behavior



- ✦ Most active at night
- ✦ Hide in cracks and crevices, often in groups
- ✦ Cannot fly, jump, or burrow into skin... they crawl
- ✦ Hitchhike on coats, bags, furniture, wheelchairs...



Bed bug crawling into a screw hole to hide


### What bed bugs eat and drink

Blood




### Can be confused with...


- Ticks
- Cockroach nymphs
- Other kinds of bug bites
- Allergic reactions to chemicals




Tick




Mosquito Bites



Cockroach Nymph



Bat Bug



Spider Beetle

### Signs of bed bugs

- Dead bed bugs
- Live bed bugs
- Bites
- Fecal spots
- Shed skins



### Bites

- Bed bugs cannot be confirmed by bites alone—bites do not show up on everyone
- Live bed bugs must be found



## Fecal spots

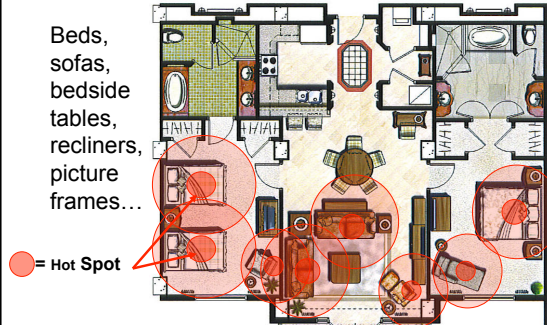
- ✦ Fecal spots are bed bug droppings
- ✦ Different from frass—frass is gritty, fecal spots are smooth.
- ✦ A current bed bug infestation cannot be confirmed by fecal spots alone
- ✦ Live bed bugs must be found



A bad infestation

## Where bed bugs live

Beds, sofas, bedside tables, recliners, picture frames...



● = Hot Spot

## How does an infestation begin?



## Areas at-risk for introduction and infestation

- ✦ Introduction is likely where people
  - frequently travel
  - set down personal belongings
  - sit or lay down for long periods of time
- ✦ Infestation is likely where bed bugs can
  - Crawl (upholstered furniture or bedding)
  - Feed on a person for 5 minutes without being detected
  - Hide in cracks or folds



### Prevent introduction and spread: residents

- Keep coats, backpacks, purses, and bags off beds, recliners, and sofas at home and while out
- Inspect used furniture carefully before bringing it home—avoid it if possible
- Look for signs when sleeping away from home

### Advice for staff, health aides, and contractors

- In units:
  - Avoid sitting or placing items on potentially infested surfaces
  - Wear a protective layer when moving infested items
- In the main office/community areas:
  - Replace fabric-covered furniture that has many crevices with plastic or metal items
  - Have residents set their belongings in plastic totes during meetings

### What are you doing to prevent introductions?



### Encourage a community response

- Educate everyone
- Destroy discarded items
- PHA should take the financial burden off of residents by providing
  - mattress encasements
  - monitors
  - large bags for furniture removal

## Prepare before you have to

- ✦ Once bed bugs are present, you don't want to disturb the area
- ✦ Ideally, residents routinely
  - inspect with a flashlight
  - launder bedding
  - vacuum
  - maintain their unit according to housekeeping standards

## IPM in action: bed bugs

- ✦ Someone reports bed bugs and the response (IPM) plan is initiated
  - Inspect
  - Identify
  - Plan treatment scaled to level of infestation
  - Take action
  - Evaluate effectiveness

## IPM in action: bed bugs

1. Inspect and interview
  - Find out where people sleep
  - Find out where people put the things that come in/out of the unit
  - Note financial, physical, or cognitive limitations that could influence treatment
  - Use a flashlight and look around sleeping areas and areas where introduction is likely

## Inspection

- ✦ Always use a flashlight
- ✦ If bed bugs are found, inspect all adjacent units
- ✦ Two types
  - ✦ Visual
  - ✦ Scent detecting canine

## Monitoring

- Trap and kill bed bugs
- Determine how bad the infestation is
- Two types
  - Passive
  - Active



Passive, moat-style interceptor

## IPM in action: bed bugs

2. Empower the resident
  - Encourage patience and cooperation
  - Ask them to NOT: fog/bomb, use their own pesticides, throw away items, change too much until a professional arrives to inspect and treat
  - Give them control options: vacuum with a pantyhose, clothes dryer for 30 minutes on high heat, encasement and interceptors, isolate belongings in plastic totes/bags
  - Give them an idea of the treatment timeline

## IPM in action: bed bugs

3. Rally the troops
  - Pest management professional (PMP): inspects, vacuums, installs encasements, installs monitors, steams, treats if necessary, schedules a follow-up 10-14 days later
  - Resident: prepares for the PMP according to provided instructions \*\*minimize burden and disruption of bugs and residents' lives\*\*
  - Staff member: "knock & talk": meet with the resident and makes sure preparation instructions are understood, get resident support/supplies if needed, check in on progress before the PMP comes to treat.

## Treatment options

- Pesticides
  - Spray
  - Dust
  - Fumigation
- Heat
  - Dryer
  - Steam
  - Container
  - Whole unit
- Freezing
  - Liquid CO<sub>2</sub>
  - Chest freezer
- Vacuuming
- Isolation
  - Encasements
  - Clear bags
  - Closed plastic containers
  - Make the bed an island

### IPM in action: bed bugs

4. Focus until "no bugs, no bites"
- PMP: follow-up visit 10-14 days after treatment, and routinely until infestation is gone
  - Resident: continues to cooperate and prevents reintroduction
  - Staff: supports resident and checks in on progress

### IPM in action: bed bugs

5. Return back to routine inspection and monitoring—find introductions before they become infestations

### Questions?

#### In-house options (minimum training)

- ✦ Encasement
- ✦ Monitoring
- ✦ Quick (15 min) visual inspection
- ✦ Steam
- ✦ Clothes Dryer
- ✦ Vacuum
- ✦ Heat chamber (FL model)
- ✦ Diatomaceous Earth (APPLICATOR'S LICENSE)
- ✦ Resident training/support

#### Leave it to the experts

- ✦ Canine inspection
- ✦ Whole-unit heat treatment
- ✦ Pesticide application
- ✦ Thorough inspection
- ✦ Active Monitoring


*"We do IPM because it is the right thing to do and because it works. Allowing our residents to live in a pest-free home is a basic service as well as a huge quality of life issue."*

—Gail Livingston

Director of Operations and Property Management  
Boston Housing Authority



## IPM resources




**Websites**

- The Northeastern IPM Center's IPM in Multifamily Housing website and blog: [www.stoppests.org](http://www.stoppests.org)
- The National Center for Healthy Housing: [www.nchh.org](http://www.nchh.org)
- The National Pesticide Information Center: <http://npic.orst.edu/>
- Boston's Healthy Pest Free Housing Initiative: <http://www.bphc.org/hpffi/AboutUs/Pages/home.aspx>
- HUD's Office of Healthy Homes and Lead Hazard Control

**People**

- Allison Taisey: [aat25@cornell.edu](mailto:aat25@cornell.edu) or 607-220-6417
- Paul Guillebeau: [bugman@uga.edu](mailto:bugman@uga.edu)



## HUD's IPM guidances

- PIH 2011-22: Promotion of Integrated Pest Management (IPM)
- Notice H 2011-20/PIH 2012-17: Guidelines on Bed Bug Control

## Get StopPests to your PHA:

1. E-mail [StopPests@cornell.edu](mailto:StopPests@cornell.edu)
2. Name a pilot site and IPM coordinator
3. Work with StopPests on realistic goals
4. Meet minimum requirements
5. Hold an on-site IPM in Multifamily Housing Training
6. Continue to work with StopPests



## Thank You!



[www.StopPests.org](http://www.StopPests.org)

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