

## Managing pests in affordable housing

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## Today's morning agenda

9am: Welcome & introductions  
 9:30: Cockroaches  
 10:30: 15 minute break  
 10:45: Pesticides  
 11: IPM  
 12: Lunch

## Afternoon Agenda

1pm: Bed bugs  
 2pm: A tour of Charleston, SC  
 3pm: Group discussion / Q&A  
 4pm: Adjourn

## Cannot ignore the issue



### The Bedbug Registry

[look up](#) • [report](#) • [alerts](#) • [city maps](#) • [resources](#) • [about](#) • [faq](#) • [blog](#)

The Bed Bug Registry is a free, public database of user-submitted bed bug reports from across the United States and Canada. Founded in 2009, the site has collected about 20,000 reports covering 12,000 households.

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

**Report bedbugs on [STOP Pests](#)**  
Search existing users.

**Check For / Report Bugs:**

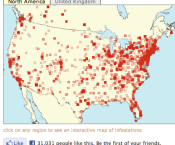
First name     Street Address  
 City and ZIP     City and State  
   

DEP Home | About DEP | Index by Topic  
 DEP Home | About DEP | Index by Topic  
 FOR IMMEDIATE RELEASE  
 January 26, 2011    Contact: Lawrence Laurre

**DEP ISSUES MAJOR FINELTY AND SEIZES LICENSE REVOCATION OF NEWARK FIRM FOR IMPROPER BEDBUG SPRAYING**


**(11/13) TRENTON** - A \$60,000 penalty was imposed today by the Department of Environmental Protection on TSP Pest Control of Newark for misapplication of hazardous pesticides in response to pest infestations, Commissioner Bill Depina announced.

The DEP is seeking permanent revocation of TSP's pesticide business license and revocation of individual applicator licenses for the company's responsible pesticide applicator, Jason Givens, and company owner Joseph Ferrara. The DEP also has charged TSP \$10,000 for the use of DEP chemical sampling in the matter, and fined a \$10,000 penalty against TSP corporate officer Marka Biaga for an applicator licensing violation.



click on any region to see an interactive map of infestations.

Like 11,011 people like this. Be the first of your friends.



## Should not ignore the issue

The image shows a screenshot of a New York Times website. The main article is titled "Cockroaches May Help Explain Asthma Outbreaks" by Amanda Hammad. It discusses how cockroaches are scientifically justified and how their dust may explain why some New York City children have asthma while others do not. A secondary article is titled "Genetics Explain How Bedbugs Infest a Building—or a Country" by Katherine Harmon, discussing how new genetic profiles of bedbugs help explain their spread and how inbreeding has helped them flourish. There are images of a cockroach and a bedbug.

## 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 image shows the cover of a report titled "The Surgeon General's Call to Action To Promote Healthy Homes 2009". The cover features the U.S. Department of Health and Human Services logo and the year 2009.

## 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

The image contains three small photographs: a close-up of a cockroach, a mouse inside a wire cage, and a bedbug on a surface.

## Other public health pests

- Mosquitoes transmit West Nile Virus
  - Need standing water
- Ticks transmit Lyme Disease
  - Get on people from bushes and rodents
- Fleas cause itchy welts
  - Come into buildings on pets and wild animals
- Bird and rodent mites make us itch
  - May move into a unit when the wild host moves out
- Lice make us itch
  - Spread on used or shared items and via person-to-person contact
- Dust mites cause asthma
  - Flourish with high humidity and poor sanitation

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### How have you fought pests?




This slide features a collection of black and white illustrations of common household pests. There are two spiders, several beetles of different sizes and orientations, and three mice. Some of the insects and mice are enclosed in thin white rectangular frames, while others are not.

### 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



This slide contains text prompts for an audience survey. It asks for the respondent's name and role on the IPM team, and offers an opportunity to ask a question or suggest a topic. Small illustrations of roaches are positioned in the bottom right corner.




### Cockroaches

This slide is mostly blank, with the title 'Cockroaches' centered at the top. The background features a faint, large-scale illustration of a roach.

### Outline

- ✦ What they are
- ✦ What they eat
- ✦ Where they live
- ✦ How to think like a cockroach
- ✦ Prevention and control

Also known as...  
*roaches*  
*cucarachas*



This slide provides an outline for a presentation on cockroaches. It includes a list of five bullet points with roach icons. A text box lists alternative names for cockroaches: 'roaches' and 'cucarachas'. Three illustrations of cockroaches are scattered on the slide.

## Cockroaches are health hazards

Cockroaches and their frass

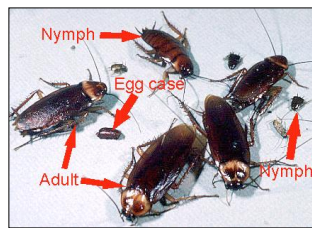
- ✦ Make asthma worse in sensitive people
- ✦ Cause asthma in preschool-aged children
- ✦ Cause or aggravate allergies
- ✦ Contaminate food, dishes, and counters
- ✦ Are unwelcome in places where we work and play

## What is a cockroach?

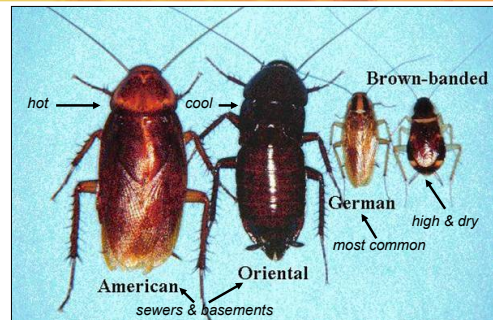
- ✦ An insect
  - ✦ Lives in areas where humans provide food and water
  - ✦ Active at night
- If you see cockroaches during the day, the infestation is serious

## What is a cockroach?

- ✦ Multiple eggs in each egg case
- ✦ Many eggs means many nymphs (babies)
- ✦ Nymphs look like small versions of the adults



## Common cockroaches







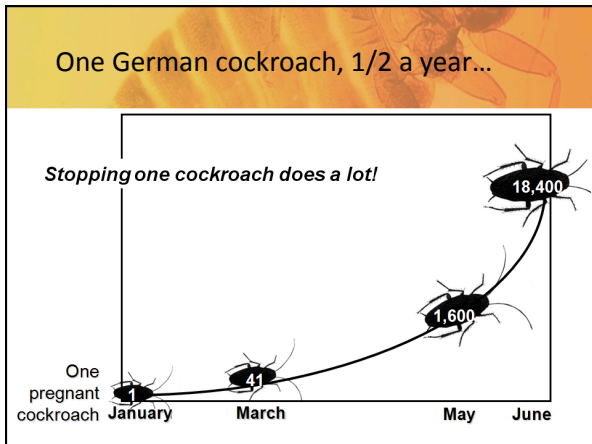
### German cockroach

- Medium size (3/4"), bronze, with "racing stripes" behind the head
- Found everywhere, but likes warmth, moisture, and darkness
- Reproduces quickly
- Mother carries eggs to term even if she is dead
- Eats almost anything



University of Nebraska  
Department of Entomology


American cockroach	Oriental cockroach
<ul style="list-style-type: none"> <li>• a.k.a. "palmetto bugs" or "water bugs"</li> <li>• Large (1-1/2"); brown color</li> <li>• Glides in the air</li> <li>• Lives in sewers and basements</li> <li>• Likes it hot</li> </ul>	<ul style="list-style-type: none"> <li>• a.k.a "water bugs"</li> <li>• Large (1"); black color</li> <li>• Lives in sewers, basements, and mulch</li> <li>• Likes it cool</li> </ul>
	




### Signs of cockroaches

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



### Live cockroaches



American  
Cockroaches



German  
Cockroaches



### Dead cockroaches




German cockroaches  
on a sticky trap

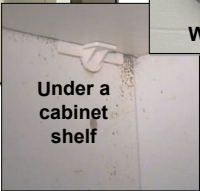


Brown banded  
cockroaches  
by a door hinge


### Frass




Door



Under a  
cabinet  
shelf




Wall clock




Behind the  
wall clock

### Where cockroaches live

- ✦ Anywhere in a building
- ✦ Prefer spots near water but also need food and warmth
- ✦ In cracks and crevices where their bodies touch surfaces above and below



University of Nebraska  
Department of Entomology



### What cockroaches eat

- Crumbs
- Grease
- Trash
- Cardboard glue
- Just about anything



Under the bag in a trash can

### Where cockroaches drink

- Sinks
- Counters
- Floors
- Pet bowls
- Shower stalls
- Sweaty pipes
- Refrigerator drip pans and gaskets
- AC units

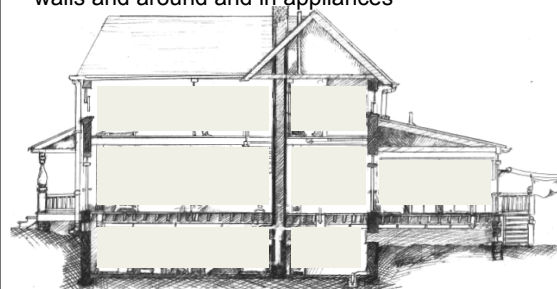
### Think like a cockroach

We think of a building as rooms, hallways and stairwells



### Think like a cockroach

To a cockroach, a building is the spaces between walls and around and in appliances



### Think like a cockroach




Nail that needs to be pounded

This is how a cockroach sees a house

### IPM practice

Cockroaches

- Need food and water
- Are most active at night



- ☛ What's the problem here?
- ☛ How would you fix it?

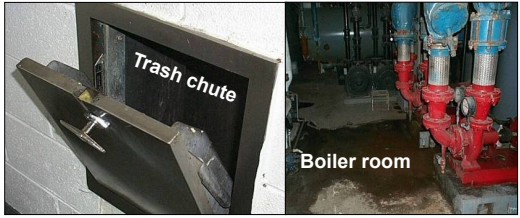
### Got cockroaches? Now what?

There is not just one answer

- ☛ First find out:
  - What kind?
  - How many?
  - Where?
- ☛ Then use solutions that provide:
  - Most effective prevention and control
  - Least risk to residents and staff

### Inspect

- Using a flashlight, look for evidence where cockroaches would find food, water, or a hiding spot: up, down, behind, and under
- Think like a cockroach – look in hidden areas



## Inspect

**Monitor** by placing sticky traps near areas where cockroaches might travel—at corners and near warmth, food, and water



## Prevention and control: Sanitation

- ✦ Good sanitation makes pest control work
- ✦ Eliminate hiding spots, food, and water available at night by
  - cleaning the kitchen
  - reducing clutter
  - throwing away dead cockroaches
  - cleaning frass and areas where there were cockroaches with simple soap and water



## Prevention and control: Exclusion

Seal or fix cracks, peeled wallpaper and shelf liners, or holes that cockroaches could get through Use

- ✦ silicone caulk
- ✦ copper mesh
- ✦ screens
- ✦ door sweeps—always on boiler rooms and exterior doors



## Prevention and control: Targeted chemical use

- ✦ Sanitation first!
- ✦ Maintenance staff and residents should not spray. Spraying should be a last resort and done only by a PMP
- ✦ Read the ENTIRE pesticide label before buying, using, storing, or disposing of a product
- ✦ The label is the law!
- ✦ Follow the label directions closely



## Break

The class will resume at 10:30am to go over the pesticide options for cockroaches

## Prevention and control: Baits

- ✦ The most effective pesticide option
- ✦ Won't work if contaminated by strong-smelling cleaners or other chemicals, pesticide sprays or foggers, or nicotine from cigarette smoke
- ✦ Use in every room where inspection finds evidence



**Gel Bait**



**Bait Station**

## Prevention and control: Baits

- ✦ The bait needs to be the only food in the area—sanitation first!
- ✦ Slow to kill: Cockroaches feed on the bait and take it back to their hiding spots where other cockroaches live



**PMP's gel bait applied under a drawer**

## Prevention and control: Insecticidal dusts

- ✦ Least toxic active ingredients you may know:
  - boric acid
  - diatomaceous earth
- ✦ How they kill cockroaches:
  - A stomach poison
  - Dry them out
  - Contact kill
- ✦ Long-lasting if dry



### Prevention and control: Insecticidal dusts

- ✦ Effective if used correctly
- ✦ Light dusting—never piles
- ✦ Use in walls before fixing them if infestation exists
- ✦ Unit location may justify application under and behind cabinets at turnover or when making large repairs...  
but clean first!



**Incorrect use of insecticidal dust**

### Prevention and control: Insect growth regulators (IGRs)

- ✦ Interfere with cockroach growth and egg hatching
- ✦ In baits, sprays, aerosols, and powders
- ✦ Take a month to work
- ✦ Stay effective for a long time
- ✦ Compatible with other IPM methods; may enhance baits

### A review of IPM tools

- Sanitation
- Exclusion
- Pesticides:
  - Bait
  - Insecticidal dusts
  - IGRs

### Don't use over-the-counter sprays and foggers

- Over-the-counter sprays and foggers are not part of IPM in multifamily housing
- They are not compatible with baits
- Cockroaches develop resistance



## Questions?



## Pesticides

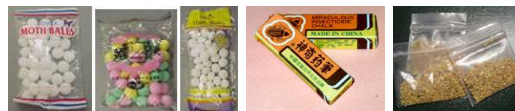
Why do people tolerate exposure to pests and pesticides?

- ✦ They are used to living with problems
- ✦ Low standards for pest control and maintenance
- ✦ Other priorities
- ✦ Not aware of the problems
- ✦ Cannot envision a better way

## Concerns with pesticides

- ✦ Pests can become tolerant of or avoid pesticides
- ✦ Risk from exposure may outweigh the benefit of killing pests
- ✦ Possible harm to pets and wildlife
- ✦ Certain populations may be especially vulnerable or sensitive to some pesticides:
  - Elderly, children, pregnant women
  - People with breathing or lung disorders such as asthma
  - People with chemical sensitivities

## How to handle illegal and risky pesticides



**Unlabeled Mothballs      Chinese Chalk Tres Pasitos**  
**Products without a pesticide label are illegal**

- ✦ Educate residents on the dangers of using illegal pesticides. For example, pesticides that look like candy are risky.
- ✦ Report illegal sales to the EPA or to the state pesticide licensing agency.

### Pesticide risk of exposure by application method


**Less risk of exposure** ←————→ **More risk of exposure**

Tamper-resistant station	Gel bait in a crevice	Total release fogger
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### Toxicity

Signal words:

- CAUTION** = slightly toxic
- WARNING** = moderately toxic
- DANGER** = severe skin or eye irritation
- DANGER-POISON** = highly toxic




### Product use and emergencies

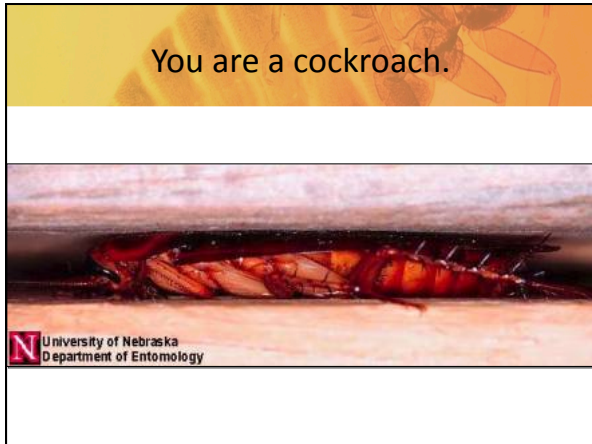
National Pesticide Information Center  
 800-858-7378  
[www.npic.orst.edu](http://www.npic.orst.edu)

Poison Control Center National Hotline  
 800-222-1222  
[www.aapcc.org](http://www.aapcc.org)

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### Questions?





Every infestation starts with an introduction



Pest management in multifamily housing must include managing introductions



Find pests that get in before an infestation grows



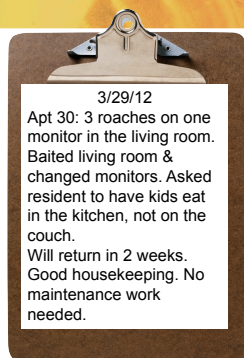
Get rid of pests using more than one control method

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





## Is your pest management working?



## 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 a team approach

### Job

1. Preventing pests
2. Finding introductions
3. Taking control
4. Monitoring success

### Responsibility



## 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





## How to know if you are getting IPM service

- ✦ Focus on prevention and monitoring
- ✦ Technicians focus on the source of the problem
- ✦ Methods such as exclusion, vacuuming & trapping are commonplace
- ✦ "Sprays" or "fogs" aren't commonplace
- ✦ Time spent relative to the infestation
- ✦ Least risk products and application methods used

## Are you using IPM?

- Service reports are unit-specific and include recommendations for residents and maintenance staff—your PMP is a consultant
- Documentation shows evidence of monitoring in every area
- Documentation reports kind and level of infestation before any pesticide application
- "Treatment" includes non-chemical methods
- Infestation is focused on until solved
- Trends identified property-wide
- New introductions are prevented through education and behavior change
- New introductions are caught and responded to through inspection and monitoring
- Education for staff: orientation, staff meetings, trainings
- Education for residents: inspection within 90 days of move-in, lease re-sign, class for housekeeping inspection failure, one-on-one support from staff and outside agencies

## How to start

- ✦ Hire a qualified pest management firm or get staff licensed
- ✦ Pick a pilot site
  - ~100 units
  - Enthusiastic and willing property manager
  - Active tenant council
- ✦ Incorporate pest-specific codes into your work order system
- ✦ Train site IPM team members using resources from [www.stoppests.org](http://www.stoppests.org)



A property manager inspecting building exteriors for holes

## Identify focus areas

- ☛ Monitor and inspect
- ☛ Identify focus areas
- ☛ Look through service records and work orders for trends

## Solve problems

- ☛ Allocate time and resources to focus areas
- ☛ Use renovation as an opportunity
  - Eliminate pests
  - Reduce the risk of pest infestation
    - Seal up holes and crevices where pests hide
    - Educate the incoming tenant
- ☛ Track data from work orders and PMP service reports to identify trends and track efficacy



Monitor under a well-sealed sink

## Focus units & housekeeping

- ☛ Require housekeeping classes that focus on taking food, water, and shelter away from pests
- ☛ Case management
- ☛ Reach out
  - Family members
  - Faith-based organizations
  - Local support agencies
- ☛ Motivate with lease enforcement

## Focus units & the PMP

- ☛ Vacuum to achieve initial knock-down and remove pests and evidence
- ☛ Visit every room
- ☛ Spend time in focus units
- ☛ Communicate with the resident
- ☛ Leave detailed recommendations on the service report

## Focus units & maintenance

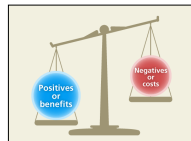
- "Exclusion" or "pest-proofing"
- Door sweeps
- Screens
- Seal around plumbing/electrical wall penetrations
- Seal cracks and crevices in kitchens and bathrooms
- Follow PMP's recommendations

## Maintain and expand pest-free housing

- Inspect new residents' homes within 90 days of move-in
- Ensure the PMP gets access to units
- Teach everyone to prevent, inspect, and monitor so introductions never turn into infestations
- Expand program to other sites

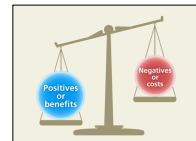
## Program costs

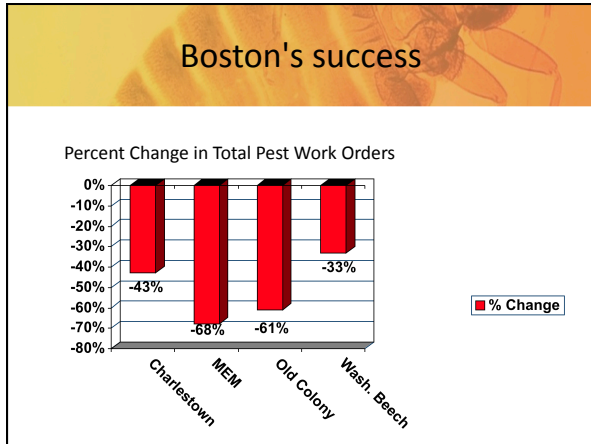
- An IPM budget includes
  - Materials for caulking and sealing holes
  - Free items for residents in need: cleaning supplies, mattress encasements, monitors, etc.
  - An IPM contract, including inspection and monitoring



## Expected program outcomes

- Increased cooperation and communication
- Decreased pesticide applications
- Infestations limited to periodic introductions—no high-level infestations
- Increased partnership with outside agencies





### Questions?

### What all long talks need

**STOP Pests**  
in housing  
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