

Steps to Healthier Homes

- Start with People
- House as a System
- Keep It:
 - Dry
 - Pest-Free
 - Safe
 - Maintained
- Making it Work

Clean	
Ventilated	
Contaminant-Free	



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Why Pest Free?



- Between 1980 and 1994, the prevalence of asthma increased 75% overall.
- Some pests are associated with asthma or asthma symptoms:
 - Dust mites
 - Cockroaches
 - Mice dander

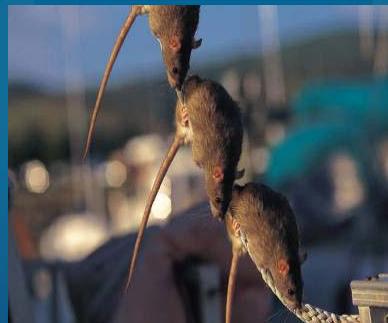


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Health Effects from Rodents

Rat bites remain a large problem in the US.



Historically, rodents have been associated with:

- Histoplasmosis
- Hantavirus
- Plague
- Salmonellosis (carriers)
- Leptospirosis



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Why Pest Free? Rat Bites

From a study of 622 rat bites in Philadelphia:

- Majority of bites occurred in the bedroom, between 12 midnight and 8 AM
- Most bites occurred in the warmer months.
- More bites in communities below the poverty level
- 86% of victims were sleeping when bitten
- The highest proportion of victims were children less than 1 year of age



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How Common are Pests?

- Signs of rodents in last three months
 - Rats
 - 0.7% homes overall
 - 1.0% for renters
 - 1.4% for residents below poverty level
 - Mice
 - 5.5% homes overall
 - 6.0% for renters
 - 9.0% for manufactured housing.
 - 8.1% for residents below poverty level.
- Cockroaches, bed bugs and other pests not measured

From American Housing Survey – 2007



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Why Pest Free?

Health effects associated with pesticides include:

- Eye, nose, throat irritation
- Skin rashes, stomach cramps, nausea
- Central nervous system damage
- Kidney damage
- Increased risk of cancers



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Pesticides and Poisonings



Almost half of all households with children under five stored pesticides within reach of children.

In 2007, Poison Control Centers reported 16,000 pesticide exposures requiring treatment.



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Spray paint and pesticide in a kitchen.



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More Pesticide Information



Up to 80% of human exposure to pesticides in the US occurs indoors.

- The method that we use to treat such pests may create human health hazards.
- 75% of US households have **used at least one pesticide indoors** during the last year.
- **Measurable levels of up to 12 pesticides** have been found in the dust inside US homes.



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HUD's 10 Elements of Successful IPM Program

1. Communicate Policies
2. Identify Problems
3. Monitor and Track
4. Set Thresholds for Action
5. Improve Non-Pesticide Methods
6. Prevent Pest Entry and Movement
7. Educate Residents and Update Leases
8. Enforce Lease
9. Use Pesticides Only When Necessary
10. Post Signs



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Integrated Pest Management

- Keep them out and give them no place to hide
 - Change surrounding landscape
 - Block pest entries, passages, hiding places
- Reduce food availability
 - Practice proper food storage and disposal
 - No dirty dishes in the sink overnight
 - Clean crumbs, grease etc.
- Knock down population
 - Traps
 - Appropriate pesticides



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Colonizers -
If you build
it, they will
come.



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Colonizing organisms must be controlled by changing the carrying capacity of the building – intervening in food, water, shelter or dating bars.



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Who are we seeking?

- Rats and mice
- Roaches
- Fleas
- Bedbugs
- House flies
- Mosquitoes
- Dust mites
- Regional pests



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See the creature, be the creature: What to look for and where to look

- The creature
- Creature droppings
- Nests and burrows
- Good food – under sinks, kitchens, trash bins
- Hidden places – inside walls, under/behind cabinets, basements/crawlspaces/attics, waste bins, under baseboards
- Near entry holes (from exterior inspection)
- Warm cavities for insects (inside TV's, computers, smoke alarms)



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A Cockroach's View



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A Rat's View



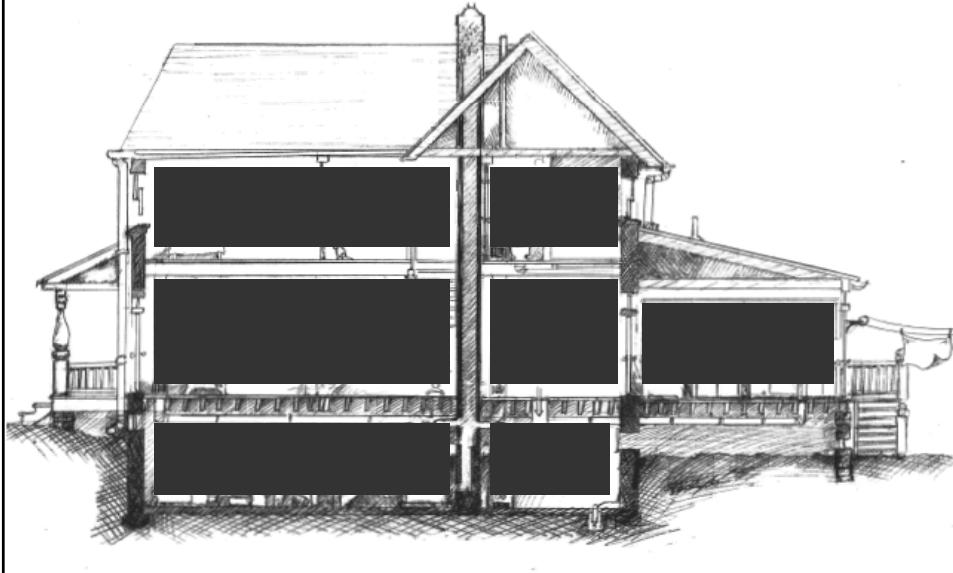
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A Person's View



A Cockroach's View



So . . .



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Pest free?



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Bat, rodent and raccoon entry



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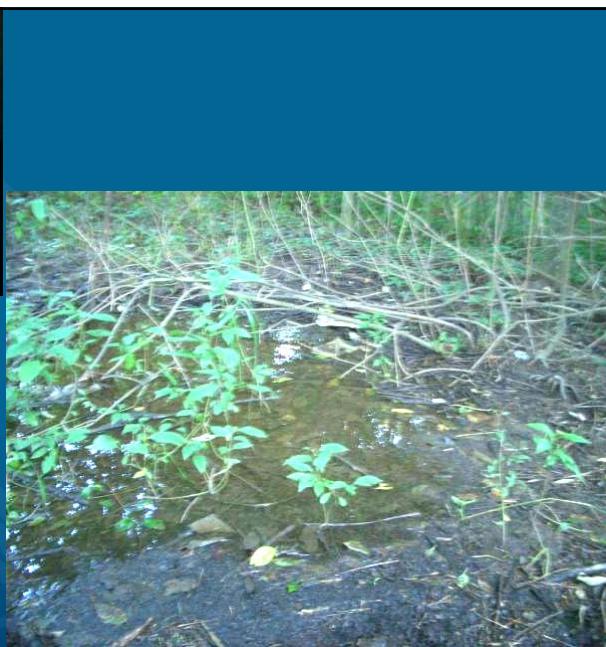
In this picture,
rat proofing did
not work

Rat burrow



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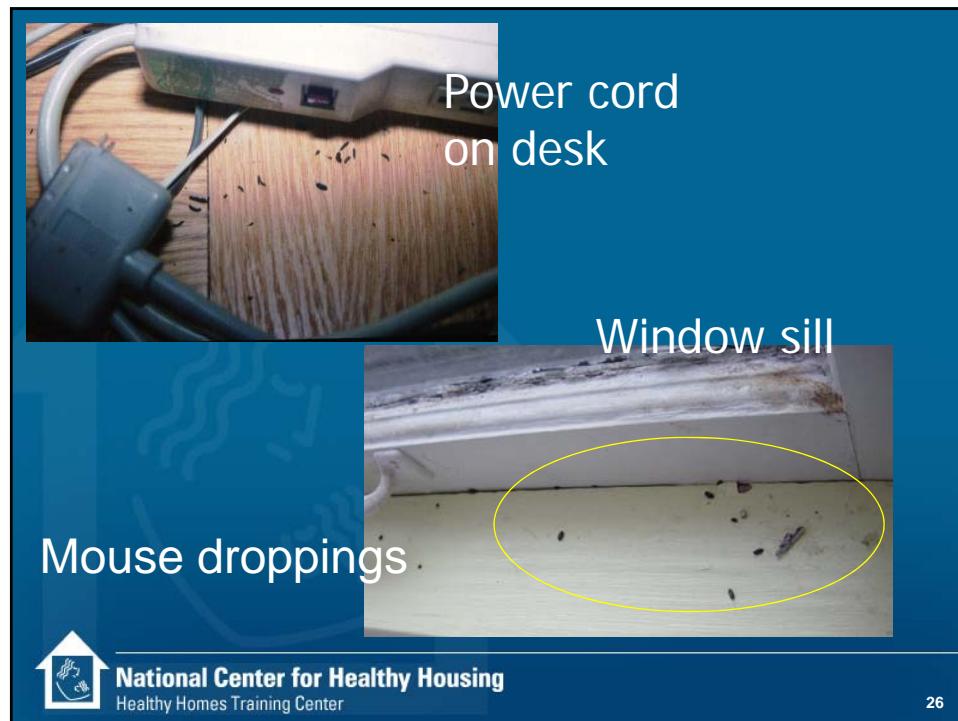
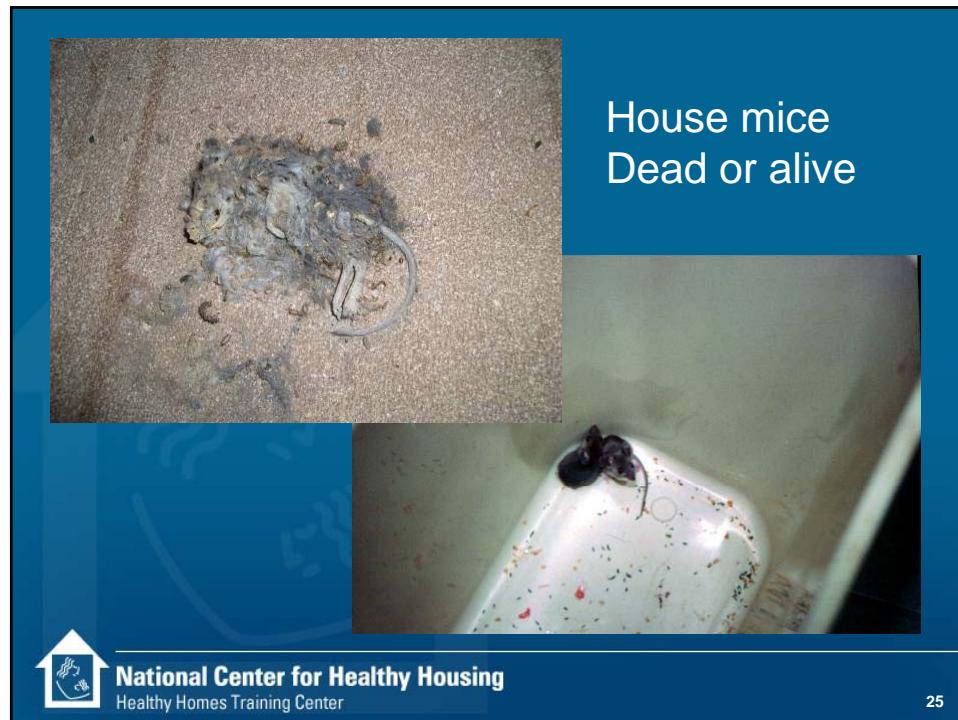
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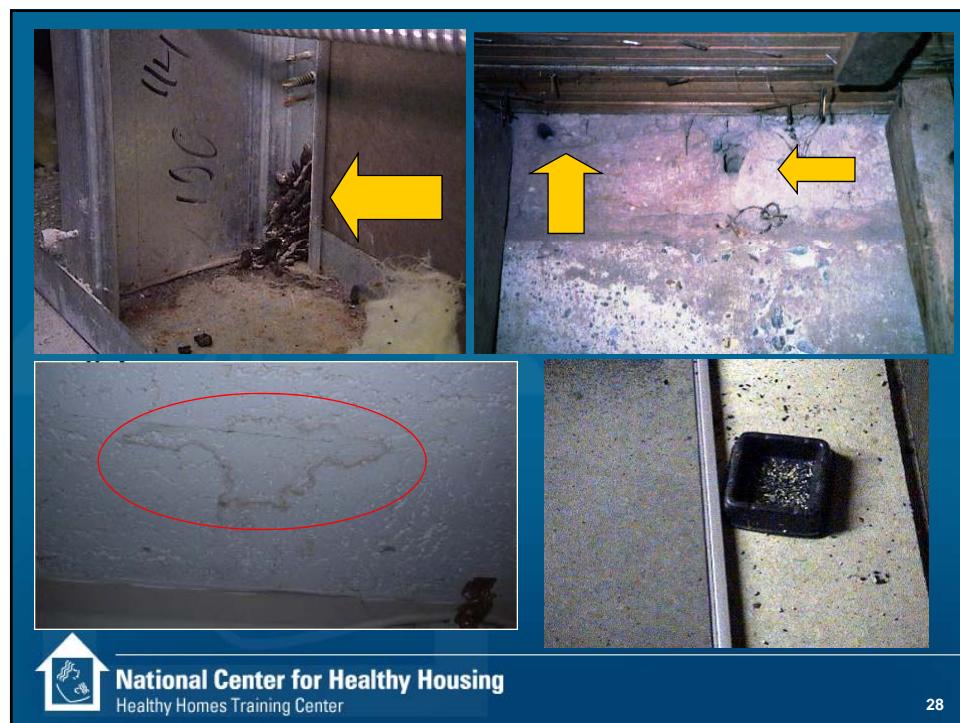
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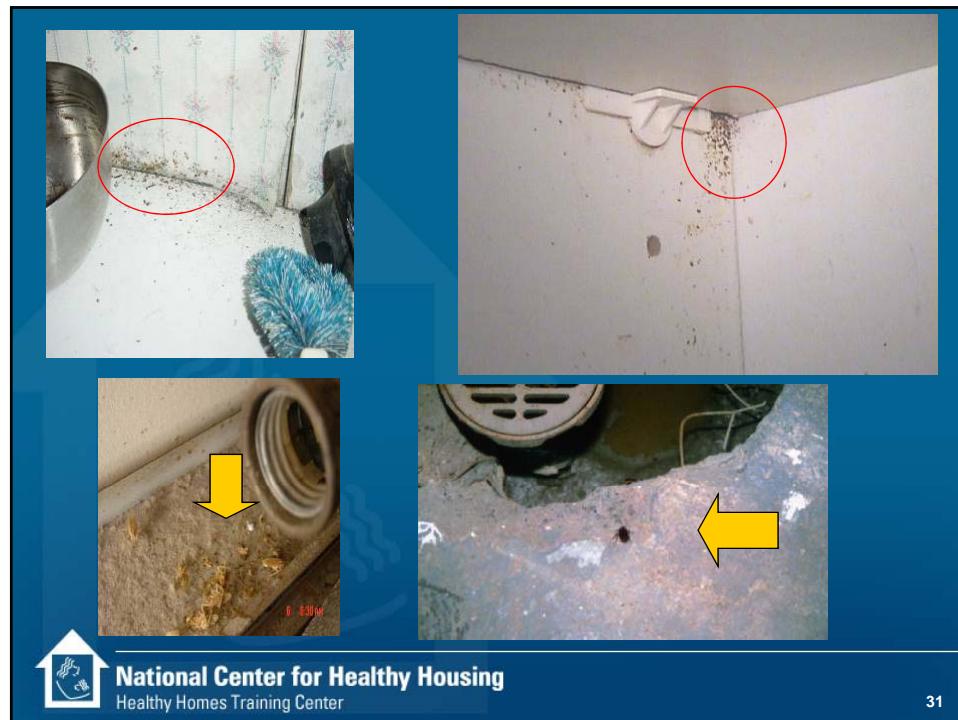
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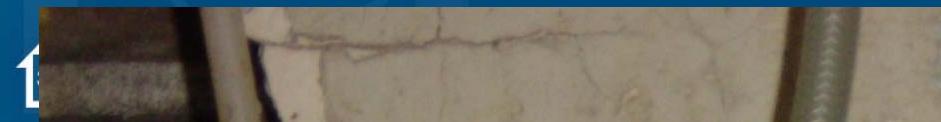
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Holes in Wall



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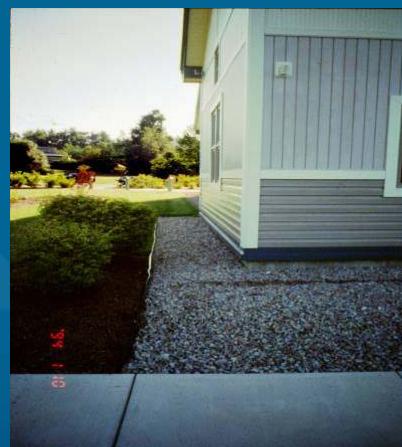


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**A different kind of
“no pest strip”:**

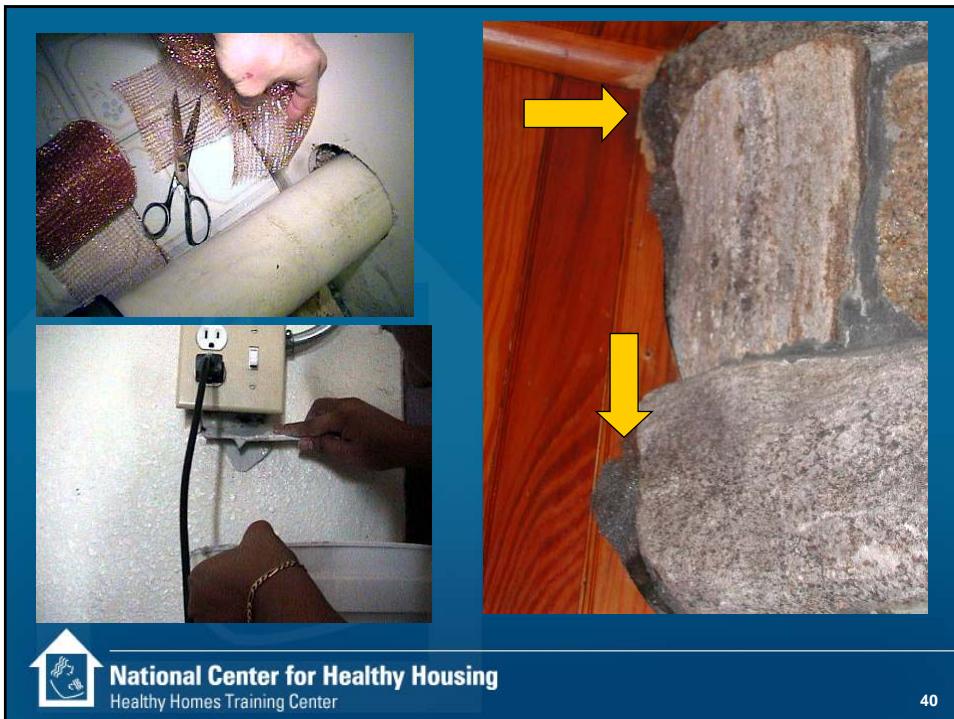
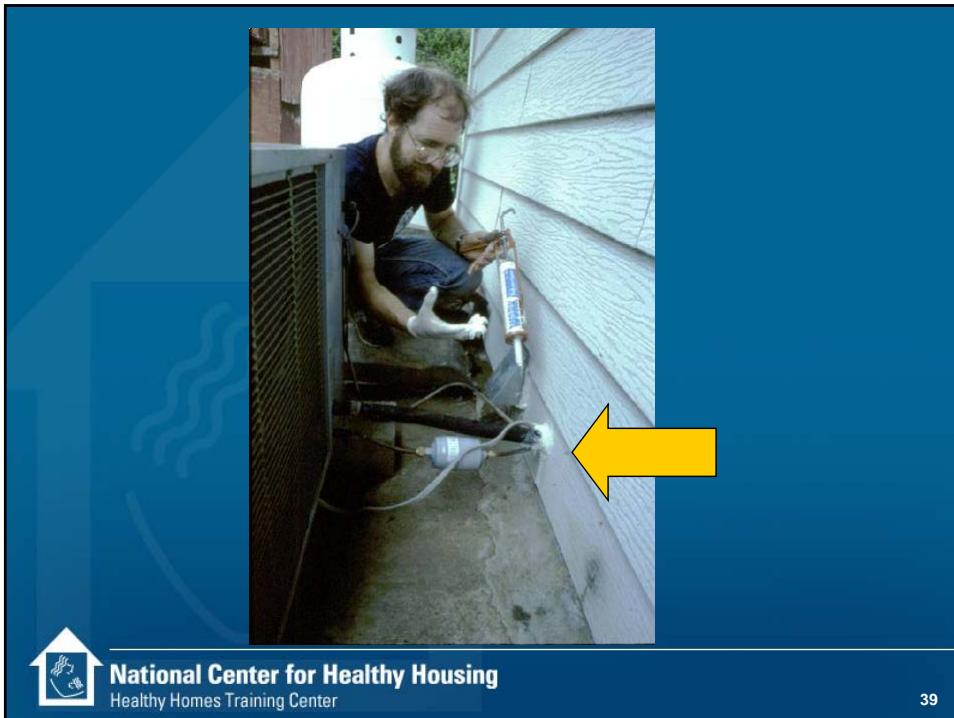
- Break up large areas of cover with wide stone/gravel walkways
- Keep all foliage at least 3ft (approx. 1m) from buildings
- Trim back any overhanging tree branches
- Many colonizing species are also prey species – they do not like open spaces

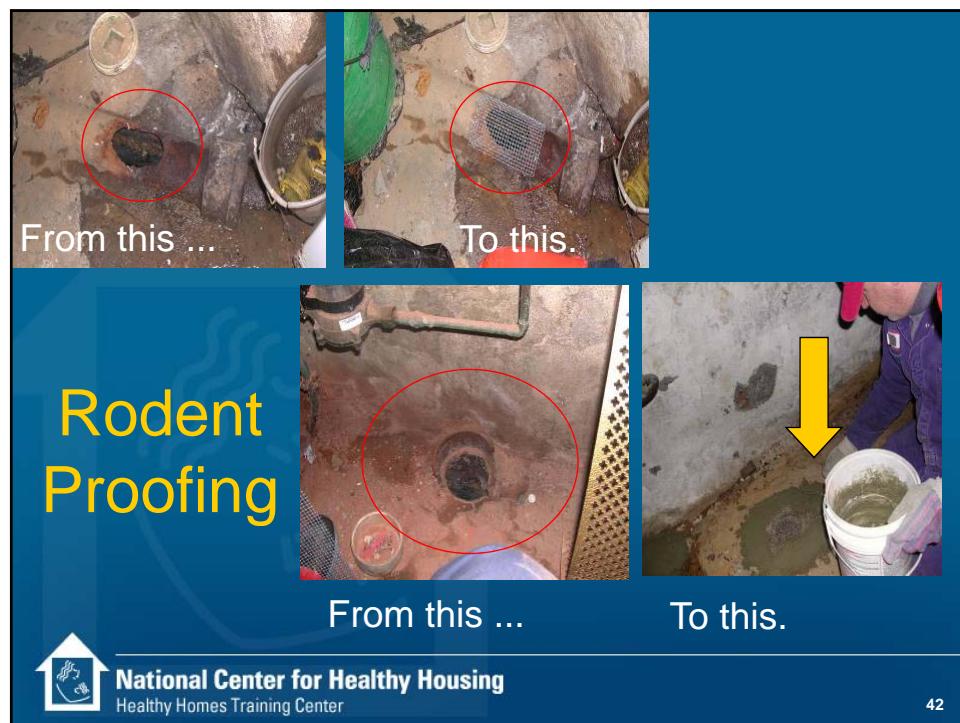
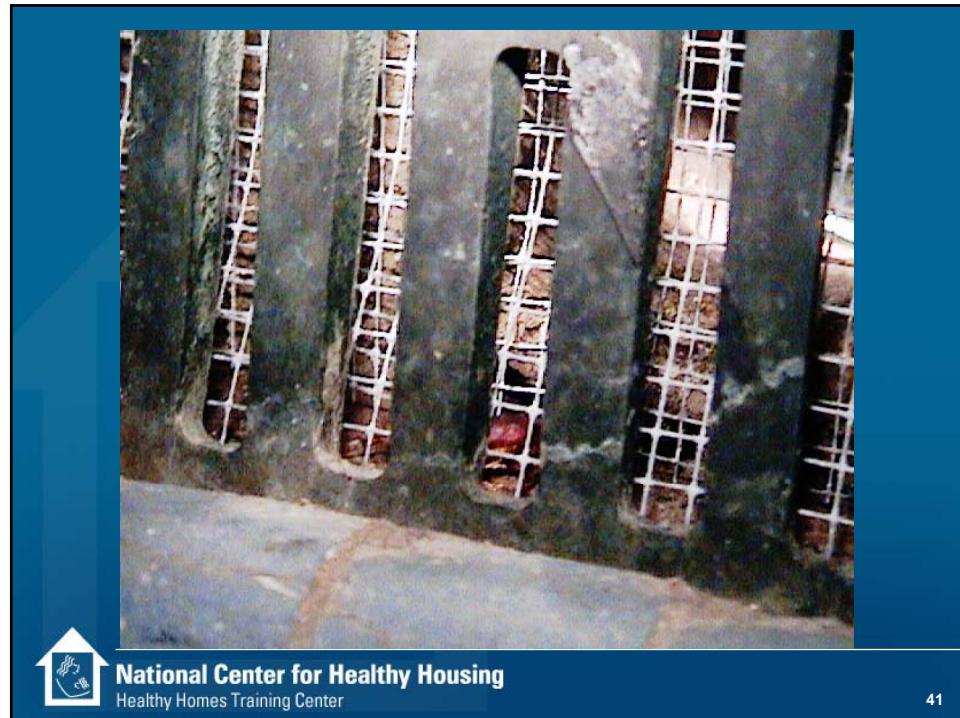


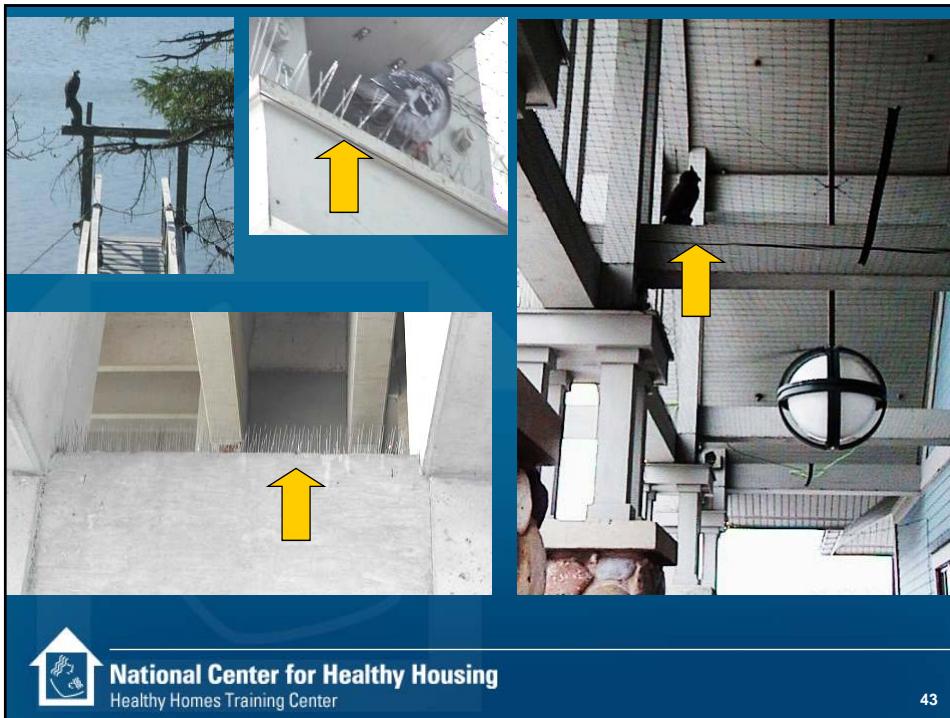
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Habitat Modification and Specialized Cleaning

- Reduce food sources and degrease
- Vacuuming
 - Hard to reach locations and places pests frequent
 - Direction of work: work from top to bottom
- Washing hard surfaces and floors
 - De-grease oven, stove, and counters
 - Two-bucket method
 - Restrict water distribution
 - Spray-bottle application



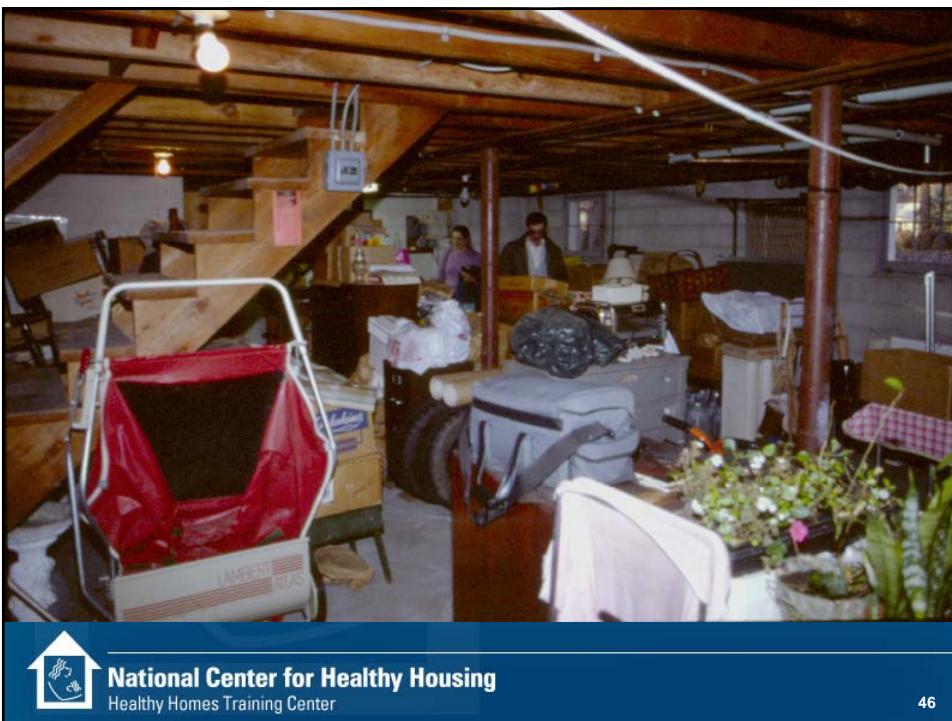
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Habitat Modification: Storage Practices

- Food materials: Store in pest-resistant or pest-proof containers
- Essential non-food materials & goods: Store in an organized fashion so that any pest/vector activities can be readily observed
- Clutter: Reduce or eliminate non-essential stored items



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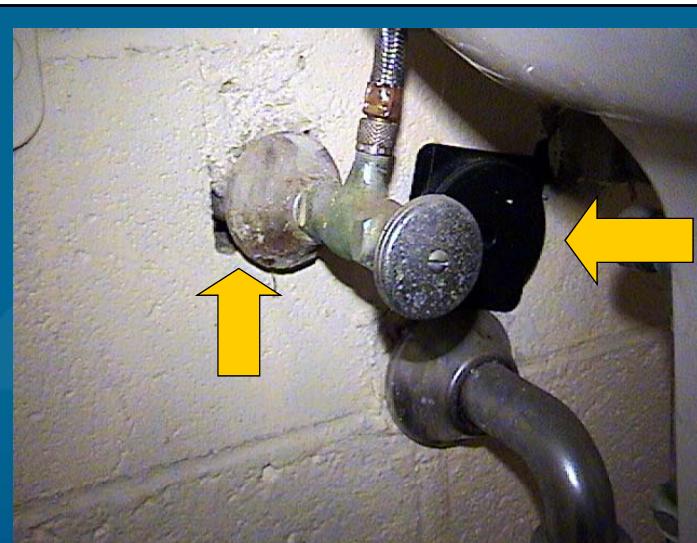


Pest proof food storage



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Unsealed roach harborage sites with bait trap nearby.



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Federal Pesticide Law

- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) administered by Environmental Protection Agency
- Pesticide – Broad term includes anything that kills or repels:
 - Insects
 - Plants
 - Rodents
 - Fungus
 - Mold
 - Microbes



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Pesticide Registration

- Manufacturer must apply for each formulation
- EPA approval required before sale or distribution
- EPA ensures that if label followed, reasonable certainty of no harm to human health and does not pose unreasonable risks to the environment.
- EPA registration number is key
- “Restricted Use” Pesticides are most hazardous.



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EPA Pesticide Product Label

- Product Name
- Ingredients
 - Active
 - Inert / Other
- “Keep Out of Reach of Children”
- Signal Word - Poison / Danger / Warning / Caution
- First Aid
- If Poison, then skull and crossbones
- Net contents.

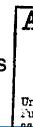
Active ingredient Boric Acid.....	40%
Inert Ingredients.....	60%
Total	100%

ORIGINAL FORMULA WITH ADDED LURE

KILLS ROACHES
WATERBUGS, AND SILVERFISH!

CAUTION
KEEP OUT OF REACH OF CHILDREN.
SEE SIDE / BACK PANEL FOR FIRST AID
AND ADDITIONAL PRECAUTIONARY STATEMENTS

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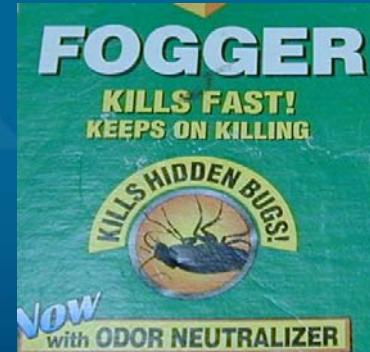
EPA Registration Number is Key



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Are these labels?



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Illegal and Risky Pesticides

- Pesticides that look like candy
- Insecticide chalk
(aka Miraculous or Chinese chalk)
- “Tres Pasitos”



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State Applicator Licensing

- Many states require pesticide applicators to be licensed if:
 - Using Restricted Use Pesticides
 - Charging a fee
 - Applying onto another person's property
 - Public places
- Licensing
 - Testing – General and Specific Situations
 - Insurance
- Supervision of Unlicensed People
 - Direct
 - Indirect



Code Requirements Related to Pests

- **EXTERMINATION.** The control and elimination of insects, rats or other pests
 - by eliminating their harborage places;
 - by removing or making inaccessible materials that serve as their food;
 - by poison spraying, fumigating, trapping or by any other approved pest elimination methods.
- **INFESTATION.** The presence, within or contiguous to, a structure or premises of insects, rats, vermin or other pests.
- **308.1 Infestation.**
 - All structures shall be kept free from insect and rodent infestation.
 - All structures in which insects or rodents are found shall be promptly exterminated by approved processes that will not be injurious to human health.
 - After extermination, proper precautions shall be taken to prevent reinfestation.



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Code Requirements Related to Pests

- **302.5 Rodent harborage.**
 - All structures and exterior property shall be kept free from rodent harborage and infestation.
 - Where rodents are found, they shall be promptly exterminated by approved processes which will not be injurious to human health.
 - After extermination, proper precautions shall be taken to eliminate rodent harborage and prevent reinfestation.
- **304.14 Insect screens.**
 - During the period from [DATE] to [DATE], every door, window and other outside opening required for ventilation of habitable rooms, food preparation areas, food service areas or any areas where products to be included or utilized in food for human consumption are processed, manufactured, packaged or stored, shall be supplied with approved tightly fitting screens of not less than 16 mesh per inch (16 mesh per 25 mm) and every swinging door shall have a self-closing device in good working condition.



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Code Requirements Related to Pests

- **308.2 Owner.** The owner of any structure shall be responsible for extermination within the structure prior to renting or leasing the structure.
- **308.3 Single occupant.** The occupant of a one-family dwelling or of a single-tenant nonresidential structure shall be responsible for extermination on the premises.
- **308.4 Multiple occupancy.** The owner of a structure containing two or more dwelling units, a multiple occupancy, a rooming house or a nonresidential structure shall be responsible for extermination in the public or shared areas of the structure and exterior property. If infestation is caused by failure of an occupant to prevent such infestation in the area occupied, the occupant shall be responsible for extermination.
- **308.5 Occupant.** The occupant of any structure shall be responsible for the continued rodent and pest-free condition of the structure.
 - **Exception:** Where the infestations are caused by defects in the structure, the owner shall be responsible for extermination.



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Resources

- Cooperative Extension Services
- State Pesticide Regulator for Pest Control Applicators/Operators
 - Often at universities
- www.ehw.org
- www.healthyhomestraining.org/ipm/



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Key Messages

- Pests can create allergens and be vectors of disease.
- Control of pests through pesticides can lead to poisonings and other neurological problems.
- Some pesticides found in homes have been banned.
- Make house less hospitable for pests. Prevent entry, control food, water, and places for shelter.
- Integrated Pest Management is the recommended strategy.



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Learning Objectives

- Name three illnesses or injuries associated with pest infestation.
- Identify three clues of pest infestation.
- Identify the three strategies associated with an IPM approach.
- Name two illegal pesticides that may be used in the home.



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