



# Don't Let the Bed Bugs Bite!!!

## What Every School Community Needs to Know

Presented by

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**Have you ever seen  
a live bed bug ?**



**Bed bugs on a backpack**

# Bed Bug Overview

1. Description
2. Myths
3. Historical perspective
4. Identification / Habits
5. Prevention
6. Integrated Pest Management (IPM)
7. Responding to Bed Bugs at School



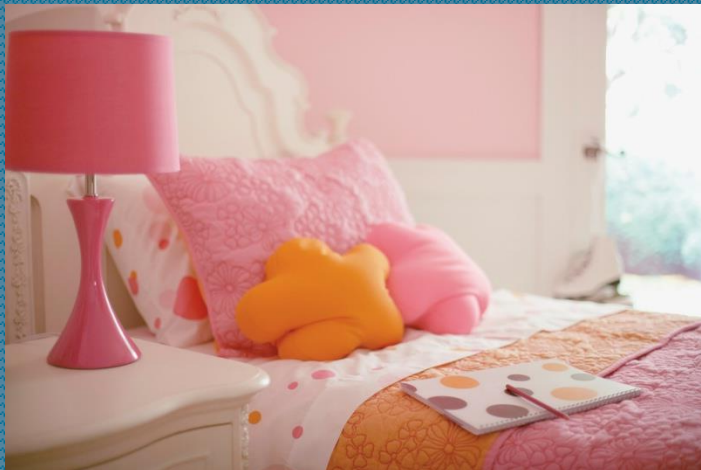
# Bed Bugs (*Climex lectularius*)

- External parasites that prefer dark places
- Fast moving
- Blood feeders but do not stick to skin or hair
- Typically feed at night
- Prefer to feed on humans but may also feed on:
  - Rodents
  - Bats
  - Birds (poultry)
  - Pets (cats, dogs, etc.)



# Bed Bugs Are Very Good Hitchhikers!

- Travel from place to place by clinging to:
  - Clothing / Shoes
  - Luggage
  - Furniture and bedding



# Bed Bugs Can Hitchhike to School!

## Brought into school by:

- Clothing
- Backpacks
- Lunchboxes
- Purses
- Books
- Other items carried into school



***Schools typically have bed bug problems when students or staff introduce bedbugs from infestations occurring in their homes.***

## **BE PROACTIVE**

- Educate school community about bed bugs
- Promptly respond to a bed bug case



# MYTHS ABOUT BED BUGS







**“You cannot see bed bugs in a home – they are microscopic in size.”**



# FICTION!

Bed bugs are small, but they can be seen without a microscope. It helps to know what you are looking for.





**“If someone has bed bugs, it is because of their bad housekeeping habits.”**



# FICTION!

Even the best housekeeper can have a bed bug problem. However, clutter can greatly interfere with control efforts.



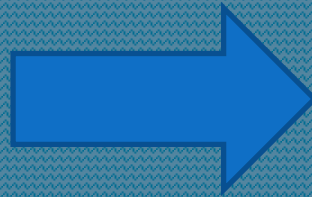


**“If I ignore the bed bug problem  
it will eventually go away.”**



# FICTION!

If untreated, the bed bug problem will become MUCH worse!



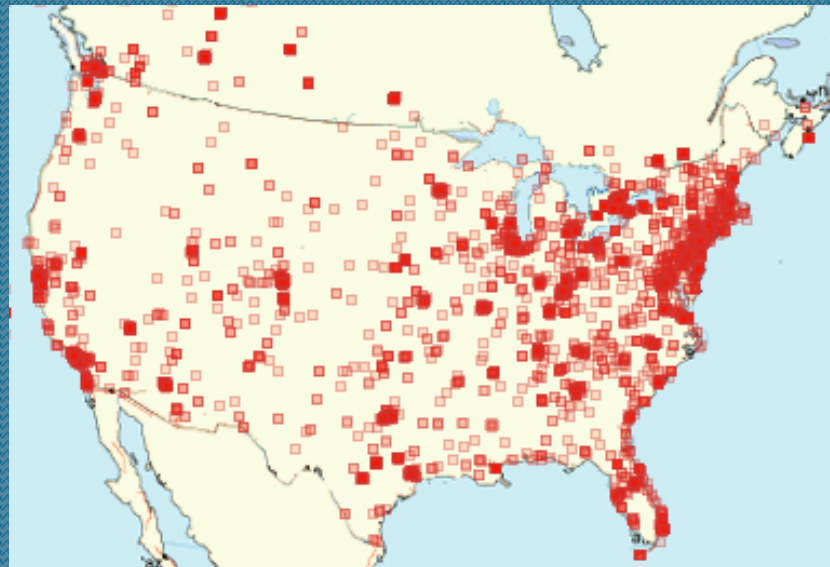
# Bed Bugs Have Plagued Humans for Thousands of Years!

- Bed bugs are mentioned in
  - Ancient Egyptian papyrus
  - Greek literature 419 BC
  - WWII



# Bed Bugs are now an emerging pest throughout the US!

- Cities across the United States have all reported increasing infestation rates.



Bed Bug Registry 2006-2012

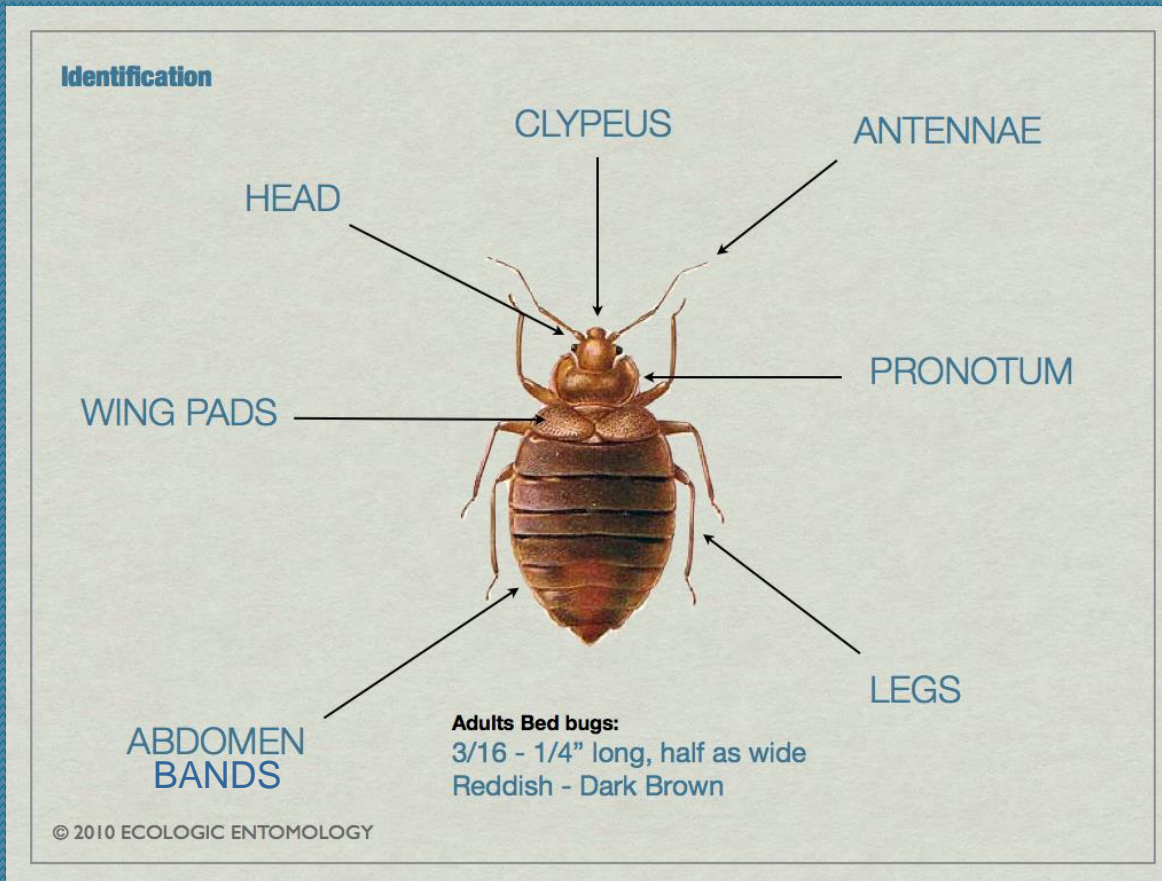


# Some Reasons for the Resurgence of Bed Bugs

- Increased domestic & international travel
- High tenant turnover
- Pesticide use has changed
  - Pesticide bans
  - Use of baits instead of sprays to control ants and cockroaches
  - Insecticide resistance
- Lack of Public Awareness

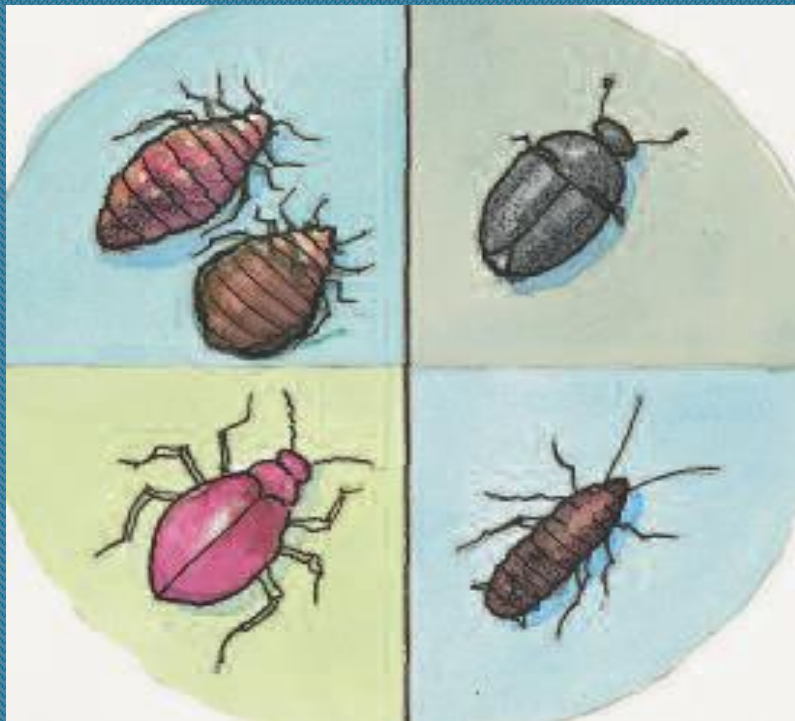
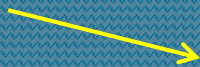


# Bed Bug Identification

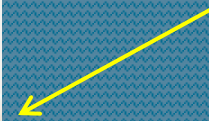


# Recognizing a Bed Bug

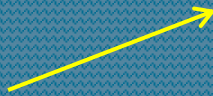
Bed Bug  
(Fed & Unfed)



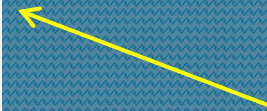
Carpet beetle



Spider beetle



Cockroach nymph

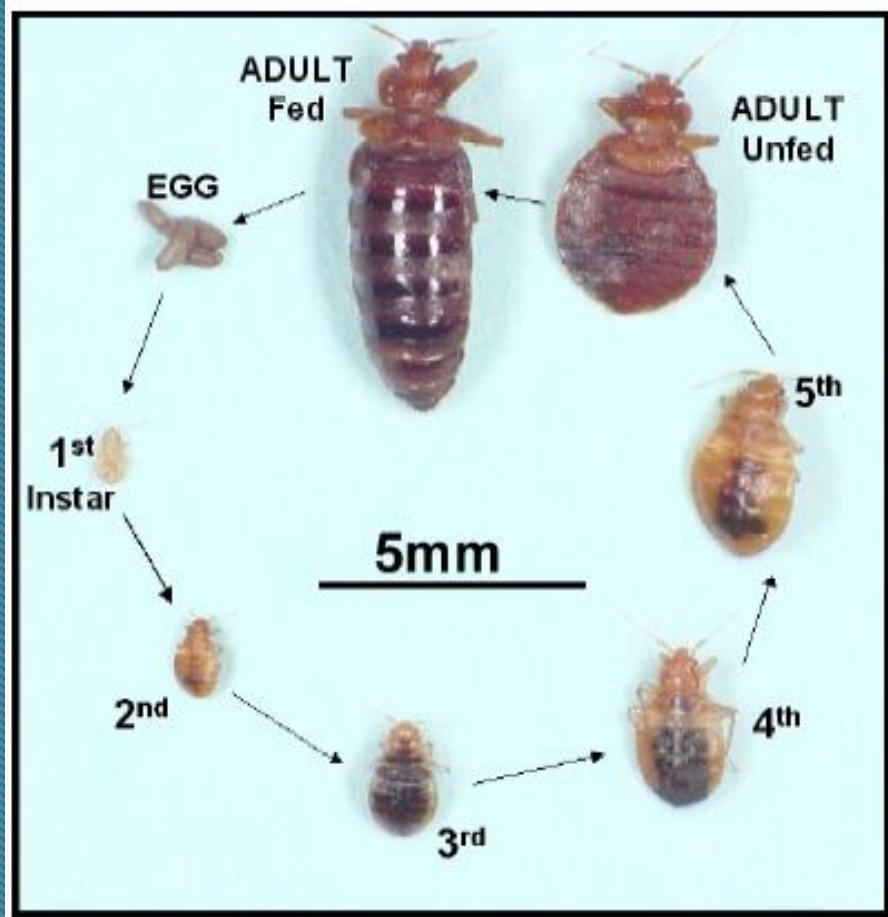


# Developmental Stages

- Egg
  - 1 – 12 eggs / day / female
  - Glued in place
  - Hatch in 6 – 17 days (temp dependent)
- Nymphs (immature bugs)
  - Colorless to crimson
  - 5 nymphal stages
  - Require a blood meal to grow
- Adult
  - Shades of brown to reddish brown
  - Can live 12 – 18 months
  - Can survive for months without food



# Developmental Stages continued



1. Developmental Stages



2. Newly hatched nymphs



3. Molted skin of the nymph

# Developmental Stages continued



# Bed Bug Habits

- Hide during the day
- Hide in dark, protected sites
- Prefer fabric, wood, and paper surfaces



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# Bed Bug Feeding Habits

- Blood feeders
- Cannot fly
- Walk fast and scurry
- Cling to clothing and surfaces, not skin
- Attracted by body heat and carbon dioxide
- Typically feed at night
- Falsely associated with dirt



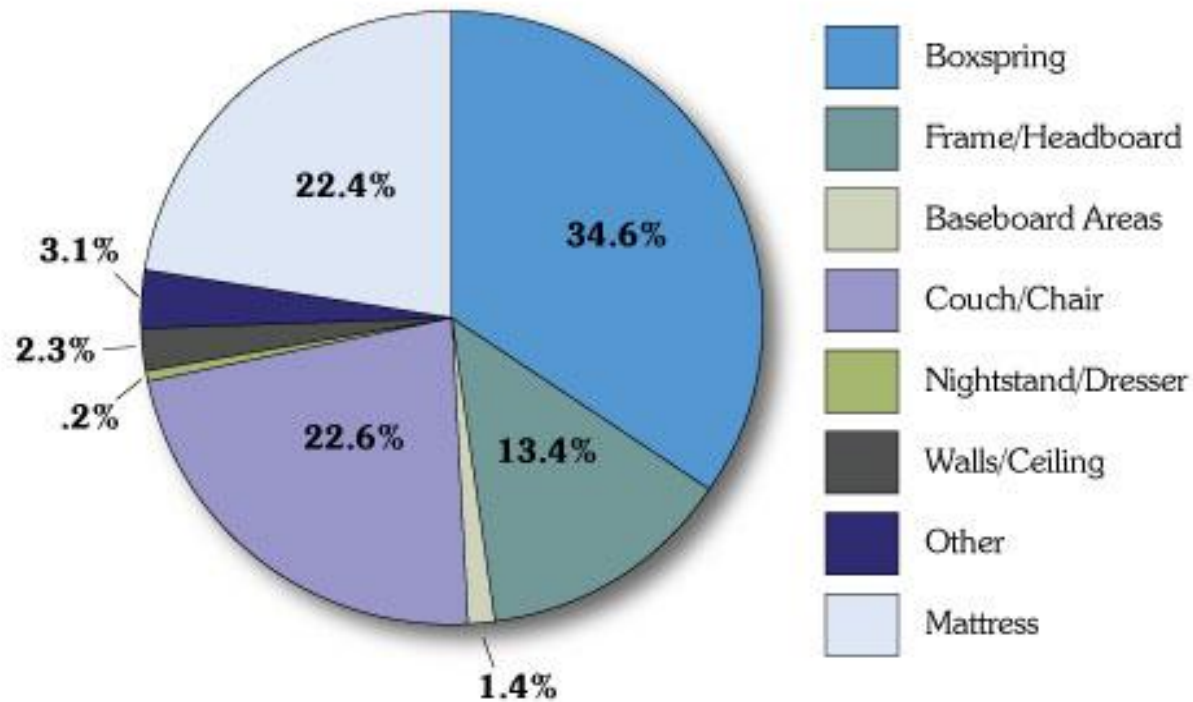


# Bed Bug Hiding Places

- Furniture, Mattress, box springs, headboard
- Cracks and crevices
- Baseboards, ceiling moldings
- Window frames and door frames
- Electrical outlets and switch plates
- Picture frames
- Drapery pleats
- Peeling wallpaper



# BED BUG HIDING SPOTS



Distribution of bed bugs found in 13 infested apartments

Source: University of Kentucky

# Bed Bugs Can Infest:

- Hotels and motels
- Dorms
- Shelters
- Apartments
- Private homes
- Planes, buses, trains, ships, etc.



# Recognizing Bed Bug Bites

- Resemble bites from other insects & arthropods
- Typically no red spot in center (such as with fleas and black flies)
- Typically occur on exposed skin
- Rarely occur on the palms or soles (such as with scabies or mites)
- Often occur in rows or groups
- Confirmation based on finding bed bug evidence



# Bed Bug Bites



Bites on leg



Bites on back



Bites on arm

# Injury from Bed Bugs

- Initial bite is painless
- Bite reactions vary from person to person
  - Some people have an allergic reaction to the injected saliva
    - Swelling
    - Welts
    - Severe itching



# Bed Bug Bites



# Injury from Bed Bugs

- Sleeplessness
- Agitation
- Anxiety
- Risk from Pesticide Poisonings
- Economic Losses





# Bed Bug Prevention

1. Recognize the tell-tale signs of bed bugs
2. Take measures to reduce the risk of bed bug infestation
3. Prevent bugs from spreading to new sites



**Did you check for bed bugs  
in your hotel room when you  
last traveled?**



# Bed Bug Prevention for Travelers



Make it a **STANDARD PRACTICE** to check for bed bugs in your hotel/motel rooms!

1. Pull back the bedding and look for black fecal spots on the mattress and box springs (esp. along the seams)
2. Carefully examine the underside of the bed skirt
3. Look for signs of bed bugs along the bed frame
4. Open nightstand drawers and look for bed bug signs along inner/outer edges
5. Look for signs of bed bugs along baseboards, in drapery creases, and in corners of room

# Bed Bug Prevention for Travelers



## Reduce the chances of carrying bed bugs from hotel/motel rooms!

- Keep clothes in your zippered suitcase in sealed plastic bags
  - Don't keep clothes in hotel drawers
  - OK to hang clothes in closet
- Keep your suitcase on the luggage rack (after first inspecting it for signs of bed bugs)
  - Do not store your suitcase on the bed, floor, or upholstered furniture

# Tell-Tale Signs of Bed Bugs



# Bed Bug Prevention at Home



## Don't bring infested items home!

- Inspect clothing, shoes, and luggage of travelers before coming in house.
- Inspect second-hand beds, furniture, pet beds, and clothing closely.
- Wash clothes and linens regularly on hottest recommended setting.
- Remove clutter around bed and couches and vacuum regularly under and around them.

# Management Tips

If bed bug evidence is found:



- Immediately contact a professional pest control company for treatment.
- Use a licensed reputable pest management professional that has experience treating bed bugs.
- Go to EPA and FTC for more information.

# Integrated Pest Management (IPM)

An Effective and Environmentally Sensitive  
Approach to Pest Management

1. Correctly identify the pest
2. Use sanitation measures
3. Use non-chemical measures
4. Apply insecticides to **targeted** sites

*Most school districts in the US have adopted IPM policies.*



# Insecticides / Pesticides

Labeling is the law!



It is a violation of Federal law to use these products in a manner inconsistent with its labeling.

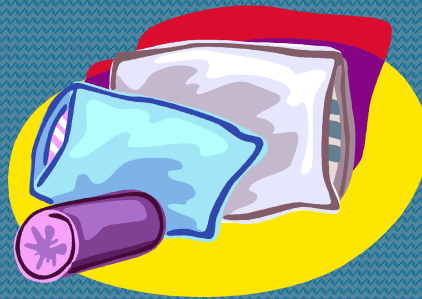
# Insecticides / Pesticides

- Residual insecticides (usually pyrethroids)
  - Vacuum area and apply to all areas
- Avoid using “kills on contact” sprays, boric acid, and bug bombs
  - Bombs will cause bed bugs to scatter
- Use non-chemical (low impact) products
- Rotate insecticide use
  - Do not keep using the same insecticide
- Spot treat all sites (every two weeks prn)



# Insecticides / Pesticides

- DO NOT apply insecticides to:
  - Human skin or pet skin
  - Clothing
  - Bedding
  - Bed linens and blankets

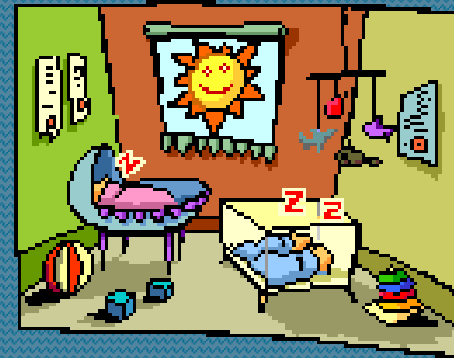


# Bed Bug Action Plan for School Districts

- Remain Calm
- Contract with a licensed pest control management company that provides IPM
- Train administrators, faculty and staff on bed bug identification and protocols
- Alert parents to U.S. bed bug problem
- Begin classroom bed bug prevention
- Develop standardized procedures when a bed bug is found on a student and when bed bugs are found in the classroom

# Bed Bugs and Schools

- In general, school and institutional child care center environments are not conducive to bed bug infestations but can be a hub for spreading them to other homes.
- The exception: boarding schools and some child care centers and some kindergarten classrooms.
- There is no scientific evidence demonstrating that enforced exclusion policies are effective.



# Bed Bug Prevention in the Classroom

- Clutter removal
- Limit items brought to school
- Use of containers
- Canine scent detection



# Responding to Bed Bug Incidents at School

- Two different protocols are needed:
  - Single bed bug on a student
  - Bed bugs found roaming in a classroom



# Sample Protocol: Bed Bugs Found in School Building

1. Remain calm
2. Identify exact location and isolate area
3. Contact IPM company
4. Capture at least one bug for identification. Crush all other ones seen.
5. If confirmed by IPM, follow directions for classroom treatment (removing clutter, vacuuming, etc.)
6. Notify parents and staff
7. IPM will inform school how long to keep area vacant after treatment is completed.



# Potential Treatment Methods

- Clutter removal and vacuuming
- Bed bug detection
- Steam
- Desiccant dusts (that dry and absorb moisture)
- Pressurized CO2 snow to freeze and clean the area
- Heating the area up to 135 degrees (the thermal kill point for bed bugs)
- Spraying targeted areas with insecticide



# Sample Protocol:

## Bed Bugs Found on a Student

1. Student is escorted to predetermined person- Be discreet and respectful.
2. Notify parent by phone. Parents should inspect student before entering home and parents should have a pest management company inspect and treat the home, if necessary.
3. Have child change into temporary clothing and place all of their clothing in the dryer on high setting for 30 minutes or tightly seal clothes in a bag if no dryer is available.
4. After clothes have been heat treated, have child change and return to class.
5. Heat the rest of the belongings and temporary clothes on high for 30 minutes. Use a dryer shelf if clothes or belongings cannot be tumbled.
6. Inspect student prior to entering class daily until parents notify you that the home has been treated.

# Sample Forms

- Notification to parent – Bed bug found on student
- Notification to school parents – bed bugs found in school building
- Sample school protocols
- Sample school response flowchart
- Brochures for parents



# For More Information:

- [http://www.cdc.gov/nceh/ehs/Publications/Bed\\_Bugs\\_CDC-EPA\\_Statement.htm](http://www.cdc.gov/nceh/ehs/Publications/Bed_Bugs_CDC-EPA_Statement.htm)
- <http://www.michigan.gov/bedbugs>
- <http://centralohiobedbugs.org/school.html>
- <http://www.vdacs.virginia.gov/pesticides/pdffiles/bb-schools1.pdf>
- <http://www.ftc.gov/bcp/edu/pubs/consumer/alerts/alt194.shtm>

# More Resources:

- <http://www.nyc.gov/html/doh/bedbugs/html/home/home.shtml>
- <http://www.epa.gov/pesticides/ipm/>
- <http://www.epa.gov/pesticides/bedbugs/>
- <http://schoolipm.ifas.ufl.edu/Florida/bedbugpests.htm>
- <http://bedbugregistry.com/>
- <http://www.cabq.gov/envhealth/bedbugs.html>
- <http://www.bell-environmental.com/>

# Thank You!

Sleep tight,  
and don't let the...  
*well, you know the rest*

