

# Guidelines For The Prevention and Control of Bed Bug Infestations in California: Perspectives From Local Health Departments



Laura Krueger, MPH BCE  
California Department of Public Health  
Division of Communicable Disease Control  
Vector-Borne Disease Section  
November 7, 2007  
[www.cdph.ca.gov](http://www.cdph.ca.gov) search word bed bugs



# Outline of Presentation

- Bed bug biology
- Status of bed bug infestations in California
- Summary of recent CDPH survey of local health departments
  - Financial assistance available for low-income populations
  - Code enforcement options
- Overview of the document “Guidelines for Prevention and Control of Bed Bugs in California”



# Order: Hemiptera

## Family: Cimicidae



*Cimex lectularis*: Common Bed Bug





**Over 25 diseases have been experimentally shown to survive in a bed bug.**

**Filariasis, Mansonelliasis, Kala-azar, Oriental sore, Espundia, Leprosy, Staphylococcus aureus, Anthrax, Pneumonia, Tularemia, Brucellosis, Paratyphoid fever, Rocky Mountain Spotted fever, Epidemic typhus, Murine typhus, Q fever, Relapsing fever, Infectious jaundice, Poliomyelitis, Yellow fever, Smallpox.**

# Bedbugs Do Not Vector Disease To Humans!



# Why is Public Health Involved in CA?

Bed bugs are considered “vectors” under California HEALTH AND **SAFETY CODE** SECTION 2000-2007

"**Vector**" means any animal capable of transmitting the causative agent of human disease or capable of producing human discomfort or injury, including, but not limited to, mosquitoes, flies, mites, ticks, other arthropods, and rodents and other vertebrates.



# Bed Bug Bites



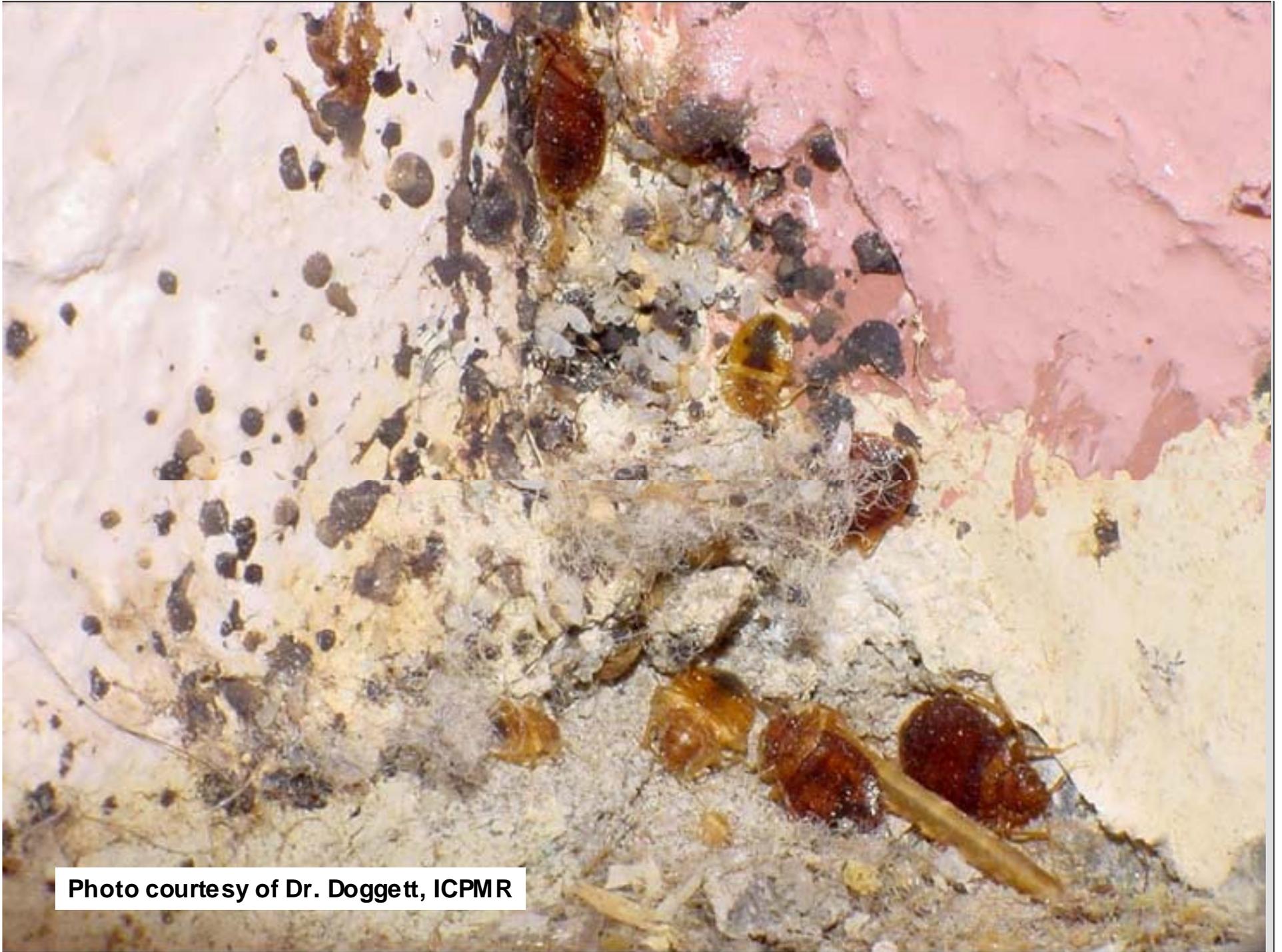


Photo courtesy of Dr. Doggett, ICPMR



Photo courtesy of Dr. Sorkin, AMNH

# Bed Bugs Are Visible To The Naked Eye



**Bed bug adult on hand**



**Bed bug nymph  
feeding on finger**

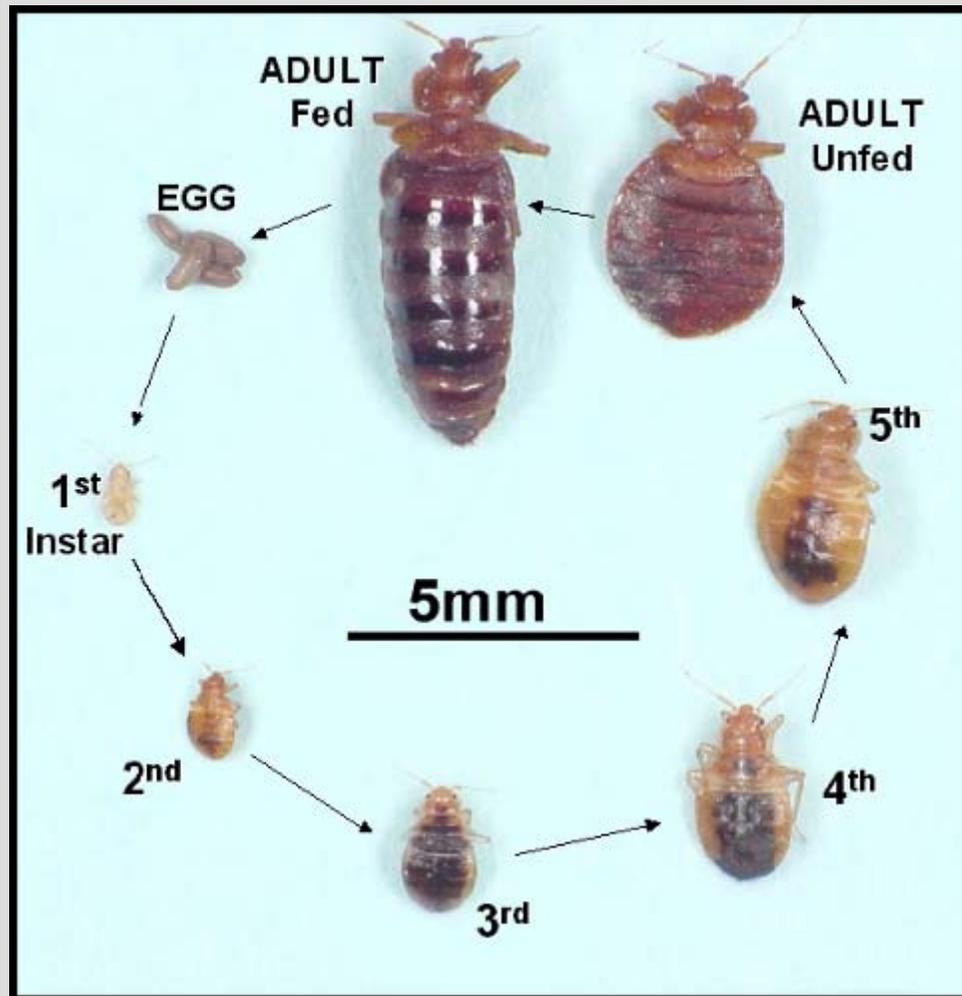


# Bed Bug Adult and Nymph





# Bed Bug Exoskeletons/Lifecycle



**Egg ---nymph (5 molts)–  
adult in five weeks**

**Females lay 200-500 eggs**

**Adults live about 10  
months**

**Can live up to 18 months  
or longer w/o blood  
meal**

**Small percent of a  
population is dispersing  
at any given time**



Photo courtesy of Dr. Doggett



# Why Bed Bug Re-Emergence?

**Populations are resistant to pesticides.**

**Cryptic behaviors make them difficult to locate and control**

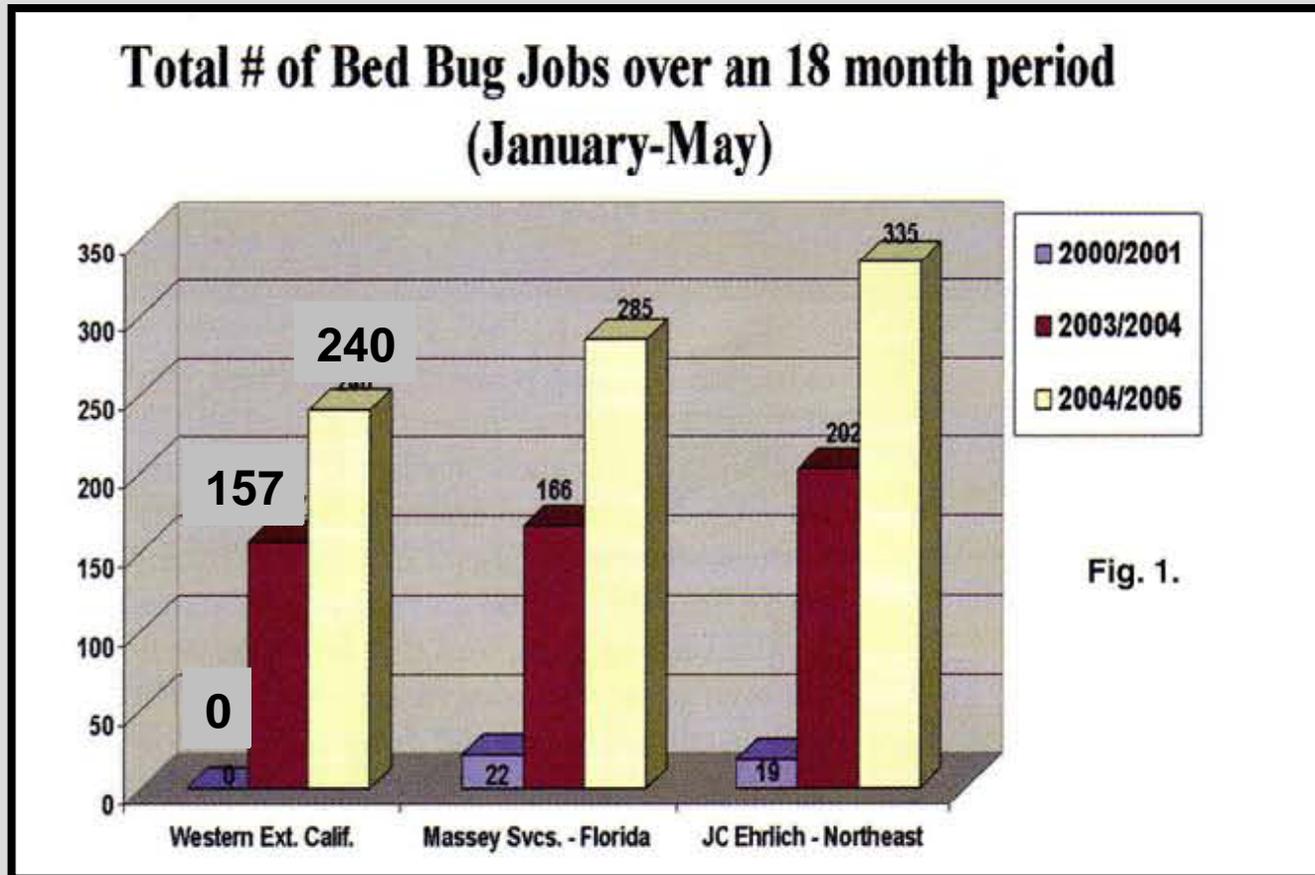
**Lack of public perception leads to build up of large numbers of bed bugs in infestations before they are detected.**

**“Considered the ‘perfect storm’ of pest control”.**  
- Dr. Potter, U Kentucky, Pest Control Magazine 2006



# California Pest Control Operator Data

The prevalence of bed bug infestations has increased dramatically across the United States, especially in California.



Cooper, American Entomologist, 2006



# California Pest Control Operator Data\*

|                                 |  |
|---------------------------------|--|
| <b>Western Exterminator Co.</b> | <b>1500 % increase in bed bug services from 2002 to 2006</b>   |
| <b>Orkin</b>                    | <b>In 2000, bed bug treatment &lt;1% of total service calls<br/>In 2006, bed bug treatment &gt;5% of total service calls</b> |
| <b>Pestec IPM Provider</b>      | <b>17 % increase in new services from 2003-2006</b>  |



\*CDPH Informal PCO Survey, 2007



# bedbugger

**7000 unique visitors/week**  
**Up to 1500 unique visitors/day\***  
**\*Bedbugger.com data 10/31/07**

[FAQs: Frequently Asked](#) | [Photos of bed bug bites](#) | [bed bug success stories](#) | [about](#) | [where do I start?](#) | [archives](#)

Questions about bed bugs

[Photos of bed bugs, and signs of bed bugs](#) | [glossary](#) | [forums: get advice](#) | [Preguntas Frecuentes: Bedbugger FAQs en español](#)

[Home](#) | [Shop for useful Stuff](#)

## Bed bug spray and coffee: Cincinnati needs professional help

October 31, 2007



### REGISTER OR LOGIN

[Register](#)

[Login](#)

[Entries RSS](#)

[Comments RSS](#)

[WordPress.org](#)



# Disturbing Facts Describing the Increase of Bed Bug Infestations in the United States

100% increase of bed bugs in NYC Public schools in a month (34-72 class-rooms infested from January-February of 2007).\*



# CDPH Bed Bug Survey

- Surveyed the local health departments in 58 California counties
- Contacted environmental health directors, communicable disease controllers, public health professionals
- Completed a 20 question web based “survey monkey” survey



# CDPH Bed Bug Survey

- Of 58 counties in California, 19 (32%) reported an increase in public reports of bed bug infestations to their agency.
- 25 (43%) counties reported no increase in public reports of bed bug infestations to the county health agency (although 6 knew of infestations in their counties not reported to their agency)
- 14 (24%) counties did not respond



**\*2007 CDPH Bed Bug Survey Results**



# Disturbing Facts Describing the Increase of Bed Bug Infestations in California\*

## Health Department Data:

- San Francisco City and County HD (<150 reports in 2004 to 300+ in 2006)
- Southern California Large Metropolitan City (22 reports in 2005, 132 in 2006)



**\*2007 CDPH Bed Bug Survey Results**



# Bed Bug Treatment Guidelines

San Francisco Health Department was the first local health jurisdiction in the US to address the issue.



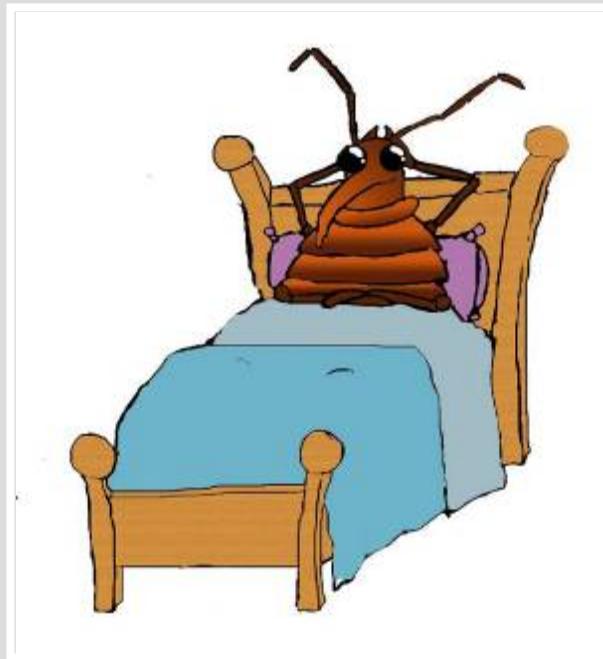
City and County of San Francisco  
Department of Public Health

**ENVIRONMENTAL HEALTH SECTION**



# Why State Guidelines?

Confusion by Pest Control Operators (PCOs), hotels, local health departments, tenants, and so on regarding bed bug biology, control, and prevention



# Why State Guidelines?



Bed bug infestations are difficult and expensive to treat.

Average cost: \$300-\$500\*  
per infestation



\*CDPH Informal PCO Survey, 2007



# Objectives of the California Bed Bug Guidelines<sup>1\*</sup>

To assist California stakeholders to:

- identify bed bug infestations;
- utilize best available bed bug treatment strategies and prevention measures; and
- cooperate with all stakeholders affected by a bed bug infestation.

<sup>1</sup> CDPH adapted these guidelines for bed bug control from the San Francisco Department of Public Health and the Australian Environmental Pest Managers Association in February of 2007

\*[cdph.ca.gov](http://cdph.ca.gov) search word: bed bugs



# Components of the California Bed Bug Guidelines\*

- **Bed bug prevention and control recommendations for owners and operators of hotels and other multi-unit dwellings**
- **Responsibilities of tenants for the prevention and control of bed bug infestations**
- **Guidance for PCOs**
- **Recommendations for the rental furniture, relocation, and storage industries.**
- **Future: hospitals, long term care facilities**



\*[cdph.ca.gov](http://cdph.ca.gov) search word: bed bugs



# Recommendations For Owners and Operators\*

Building owners and operators should:

- Respond to staff or tenant complaints of bed bugs within 48 hours with a plan of action for the complaint. The plan of action should be executed within 72 hours (three days) of the initial complaint.

NYC Bed Bug Guidelines recommend that upon learning of a bed bug infested room, NYC hotels should complimentary launder a guest's items.

Las Vegas Hotel Association recommends calling prior room residents to notify them they may have stayed in a bed bug infested room.



\*[cdph.ca.gov](http://cdph.ca.gov) search word: bed bugs



# Recommendations For Owners and Operators\*

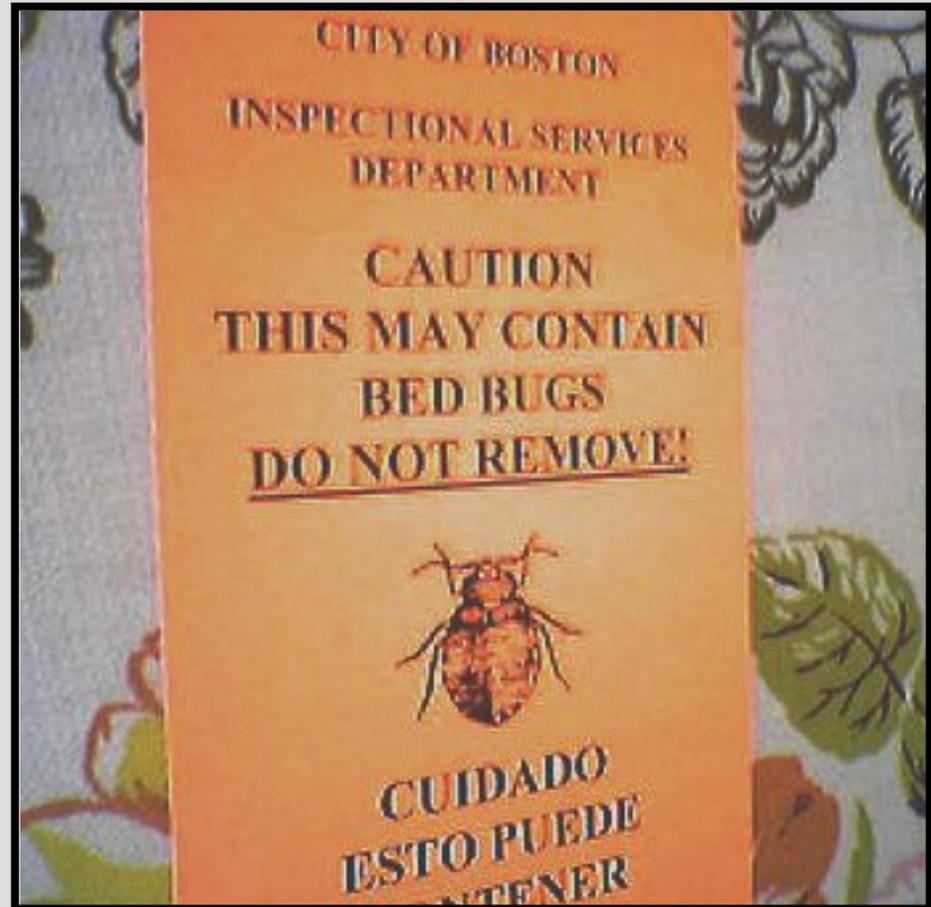
- Notify tenants adjacent (next door, above, and below the infestation) to bed bug infested properties. Such notification should specify the presence of bed bugs in adjacent properties, and the need to prepare their properties for inspection and treatment, if necessary, for bed bugs.



\*[cdph.ca.gov](http://cdph.ca.gov) search word: bed bugs



# Notification Placards





# Tenant Guidelines: Remove Clutter



**cluttered**



**vs.**



**not cluttered**

**Much easier for a PCO to achieve control  
in clean, non-cluttered areas**



# Wrap mattress and box spring prior to removal from infested room



Image courtesy of Terminix's 6 page bed bug instruction leaflet given to customers prior to treatment



# Management of furnishings and materials infested with bed bugs (cont)\*

- Clearly label infested items as “bed bug infested” prior to disposal, recycling, or placing infested items curbside



\*[cdph.ca.gov](http://cdph.ca.gov) search word: bed bugs



# Responsibility of PCOs\*

The PCO should integrate both non-chemical and chemical means of control, referred to as integrated pest management (IPM), into a bed bug eradication treatment plan. Complete eradication with a single treatment is unlikely, so PCOs performing bed bug treatments should provide at least one chemical or non-chemical means of control to the infested rooms every two weeks, for three consecutive treatments.



\*[cdph.ca.gov](http://cdph.ca.gov) search word: bed bugs



# Management of rooms or situations with tenants unable to take care of themselves, or tenants who are unable to prepare a room for treatment\*

Owners and operators of hotels, guest houses, and other multi-unit dwellings should contact the social worker, case worker, or local county health department for assistance with tenants or guests who are unable to prepare bed bug infested rooms for inspection and treatment by a PCO.



\*[cdph.ca.gov](http://cdph.ca.gov) search word: bed bugs



# Financial Assistance to Low Income Persons for Bed Bug Eradication in California\*

The Single Room Occupancy (SRO) Hotel Collaborative (None Government Agencies) working with the homeless was awarded \$63,000.00 by the SF Board of Supervisors, through the Dept. of Public Health budget, to use the money to assist tenants with a bed bug infestation who are unable to take care of themselves.



City and County of San Francisco  
Department of Public Health

**ENVIRONMENTAL HEALTH SECTION**



\*CDPH Bed Bug Survey, 2007





“Bed bug reports are confined to the realm of gossip blogs. Health departments don’t consider bed bugs a health risk, but they should. And if enough people call, they may take action. ”

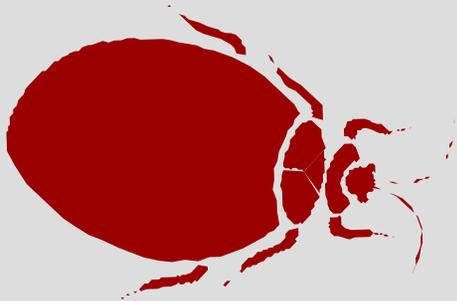
- Bedbugger.com 10/2007

# Acknowledgements

Dr. Anne Kjemtrup, CDPH VBDS  
California Environmental Health Association  
Los Angeles County Public Health  
San Francisco City and County Public Health  
Western Exterminator Co.  
Pestec IPM Providers  
Orkin



# THANK YOU QUESTIONS?????



**Laura Krueger, MPH**  
**California Department of Public Health**  
**Vector-Borne Disease Section**  
**[lkruieger@cdph.ca.gov](mailto:lkruieger@cdph.ca.gov)**  
***cdph.ca.gov search word: bed bugs***

