

Recommendations for the Management of Bed Bugs in New York City

**New York City Bed Bug Advisory Board
Report to the Mayor and City Council**

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New York City Bed Bug Advisory Board

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Recommendations for the Management of Bed Bugs in New York City

Executive Summary:

Bed bugs have become a serious issue for many New Yorkers, especially those least equipped to deal with them. The spread of bed bug infestations is a burden on the resources of New York City residents, property owners and health and social services providers in both the public and private sector. Bed bugs are not known to transmit disease through their blood-feeding activity; however, it is the Advisory Board's position that bed bugs are a pest of public health importance due to the emotional and psychological impact that they can have on those affected (Reinhardt and Siva-Jothy, 2007; Hwang et al., 2005; Kussman, 2008; Doggett and Russell, 2009; Potter et al., 2010).

In 2009, New York City adopted Local Law 14, which created a Bed Bug Advisory Board to guide the City in addressing bed bug infestations. The Advisory Board was convened to issue a report to the Mayor and City Council within nine months of appointment of members. The Local Law provides that the report will include specific recommendations on the following topics:

- i. Prevention and treatment of bed bug infestations in private dwellings;
- ii. Prevention and treatment of bed bug infestations in public accommodations and institutions, including, but not limited to, schools, hotels, hospitals, nursing homes, jails and residential shelters;
- iii. Tracking and reporting of bed bug infestations;
- iv. Disposal of bed bug infested items;
- v. Bed bug training and/or education for urban pest management professionals;
- vi. Bed bug training and/or education for city workers;
- vii. The development and most effective distribution of public education and resource materials on bed bug prevention and treatment, including, but not limited to, information on the rights and responsibilities of landlords, tenants and homeowners.

The Advisory Board began meeting in September 2009 to understand the size and scope of the issue, the ways New York City is currently coping, and opportunities for improved management.

After 7 months of information gathering, analysis, and discussion, the Advisory Board has reached consensus on the recommendations described in this report. It is the Board's finding that the current spread of bed bugs can and must be curtailed. We base our analysis of this problem, and our recommended solutions, on the firm belief that:

- Bed bugs are a pest like no other. There is no simple, straightforward, or typical treatment; it requires approaches and resources that are different than most other pests.
- Bed bugs can negatively affect our physical, mental, and social well being.

- If strong action is not taken quickly by the City, the impact of bed bugs on residents, business owners, and visitors will continue to increase, thereby increasing economic hardship and decreasing quality of life.
- Dissemination of inaccurate and inconsistent information about bed bugs and their control creates confusion, leads to unnecessary financial burden and facilitates continued spread.
- Awareness and education are a pre-requisite for early detection and quality management.
- Early detection of bed bugs is crucial for successful management and minimization of spread/infestation.
- Because early detection is only part of the solution, the City needs to help ensure that sound bed bug management principles— relevant to diverse scenarios and environments—are widely known and practiced.

In order to mitigate the direct and secondary health effects, quality of life impact, and economic hardship of bed bug infestations in the immediate present and to increase long-term opportunities to stop and reverse the spread, the Bed Bug Advisory Board makes the following recommendations to the Mayor and the City Council:

Part 1. Education, Awareness, and Early Detection

Recommendation 1.1: Take a proactive approach to public education and awareness.

Recommendation 1.2: Provide bed bug training to stakeholders.

Recommendation 1.3: Launch and maintain an online Bed Bug Portal devoted to bed bug facts and resources.

Part 2. Treatment and Remediation

Recommendation 2.1: Establish protocols for proper disposal of infested items.

Recommendation 2.2: Develop suggested minimum pest management practices.

Recommendation 2.3: Create guidelines for the donation of used and second-hand items.

Recommendation 2.4: Develop triage approach for immediate response.

Recommendation 2.5: Offer guidelines for self-remediation.

Part 3. Monitoring and Policy

Recommendation 3.1: Assemble a Bed Bug Team, headed by a qualified entomologist or equivalent professional and support staff, to coordinate City wide bed bug efforts in conjunction with a Bed Bug Working Group.

Recommendation 3.2: Develop integrated monitoring, tracking and reporting tools.

Recommendation 3.3: Improve the Department of Housing Preservation and Development (HPD) bed bug infestation inspection protocols and code enforcement capacity.

Recommendation 3.4: Increase the capability of New York City Housing Authority (NYCHA) to take a proactive stance in preventing and addressing bed bug infestations.

Recommendation 3.5: Evaluate current housing court procedures as they relate to both landlords and tenants and look for methods to compel compliance and access to ensure effective bed bug management.

Recommendation 3.6: Utilize Article 151 of New York City Health Code to help overcome obstacles associated with bed bug management in buildings with widespread infestations.

Recommendation 3.7: Require landlords to provide written bed bug information to tenants upon lease signing and renewal.

Recommendation 3.8: Disseminate consumer warnings about bed bug risks from used furniture and mattresses.

Recommendation 3.9: Encourage small business and social enterprise start-ups to provide bed bug preparation services for low- and moderate-income households

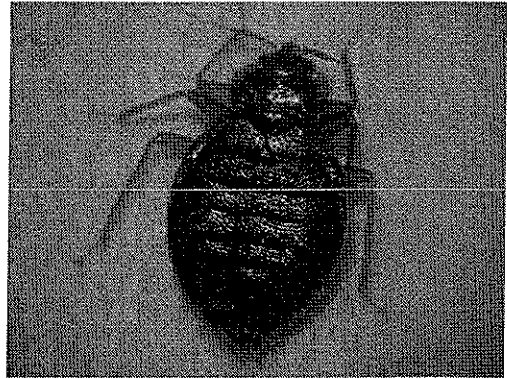
In order for any of the recommendations described in this report to have meaningful and sustainable impact, the Advisory Board believes there needs be:

- A budget for the City to fund and support these recommendations.
- A dedicated entomologist or equivalent professional with support staff to develop and oversee all educational materials and to ensure that all distributed information is accurate and up-to-date.
- Consistent, accurate and up-to-date information in all bed bug-related materials provided by the City and made available to City agencies, their vendors and contractors, stakeholder groups and the public.
- Establishment of a Bed Bug Team and a Working Group charged with ensuring that the three-part strategy outlined in this report is implemented:
 - Education, public awareness and early detection
 - Treatment and Remediation of bed bug infestations
 - Monitoring and policy

New York City should devote the necessary resources and professional staff to this effort in order to ensure that its positive effects are maximized and that the current drain of bed bugs on City resources is minimized. The City can take this opportunity for leadership and resource maximization while modeling for the rest of the country an effective public health response to the re-emergence of bed bugs in cities.

Overview: Bed Bug Infestations in New York City

Estimating the number of bed bug infestations in New York City is difficult due to stigma, landlord financial responsibility, limited data collection opportunities, lack of accurate information, and under-reporting. Nonetheless, there is evidence of the increasing prevalence of bed bug infestations, and of mounting economic, social and health impacts (Feiden, 2007; Solomont, 2008; Morris, 2009).



Private residential rental housing violations data in New York City show a greater than 240% rise in bed bug violations from 2006-2009, from 1,193 to 4,084 violations (Appendix A – Statistics and Graphs). Violations are issued to landlords as a result of verified tenant complaints. Community district data indicate some level of concentration in the poorest neighborhoods of New York City.

The annual number of bed bug infestations occurring in New York Housing Authority (NYCHA) housing, compliant private rental buildings, and privately-owned apartments, homes, hotels, nursing homes, commercial and public buildings throughout the city is unknown. However, reports from pest management service providers, residents, social and health services providers and other key workers—as well as highly-publicized infestations in workplaces—suggest an unprecedented rate of spread.

In 2009, 311 received 33,772 bed bug-related inquiries, up from 21,922 in 2008, an increase of 54%.

There were 426 confirmed bed bug cases resulting in treatment in 243 New York City public schools in FY 2009, twice as many as the preceding year.

The spread of bed bug infestations is rooted in several factors, including:

- lack of public awareness and knowledge;
- the density of multi-unit building living spaces;
- inadequate access to and unaffordability of quality pest control services and resources for bed bug treatment;
- varying standards of preparation and treatment;
- the current limitations of the materials and methods for bed bug control;
- a lack of efficient procedures to resolve landlord/tenant disputes in an equitable way.

The effects of bed bugs on human health can be significant, despite the fact that bed bugs have never been shown to spread disease. Health effects may include dermatitis and secondary dermal infections due to bites, as well as anemia in severe cases (Pritchard and Hwang, 2009). However, the most significant health effects appear to be the onset of stress, anxiety, depression, and fatigue caused by the

presence of bed bugs in the home. These health effects are then amplified by the time and expense it takes to manage bed bugs successfully. Additionally, when bed bugs are present in the homes of those requiring home health care or other services, it is common that service providers will not provide services until the bed bugs are gone, thus denying some people of medical care and other needs (Davis, 2008; WoodGreen, 2009b).

New York City property owners and residents alike often lack appropriate information to quickly identify and combat an infestation; lack the conditions and resources to eradicate infestations; and make preventable mistakes that all too often exacerbate their infestations. Recommended bed bug management practices—appropriate inspections, pest-proofing, appropriate disposal of infested furniture and mattresses, coordinated treatment of infestations, and education of tenants and property managers—are not widely known or adopted.

It is critical to act at this time as bed bug infestations continue to spread and the costs to property- and business-owners and residents continue to increase. In a time of fiscal austerity, the City should choose strategies that are both cost-efficient and highly effective. Smart, dedicated action can prevent the spread of bed bugs, thereby saving money and preventing waste in the long term. In addition, New York City can be a model city, setting an effective standard that other urban areas can follow.

Recommendations

While this report focuses largely on residential settings, it is the home environment which serves as a reservoir for bed bugs in non-residential settings. Moreover, the general practices discussed in this report apply both within and outside the home.

Please note that the following recommendations are *not* listed in order of priority.

Part 1. Education, Awareness, and Early Detection

Recommendation 1.1: Take a proactive approach to public education and awareness.

Raising the awareness of New York City residents about bed bugs, and particularly the fact that *any* person can get bed bugs in their home, is a critical step in preventing bed bug spread and stigma.

It is not uncommon for bed bug infestations to become well established before being detected by occupants of infested dwellings. Many people with bed bugs in their homes may be unaware of the pest presence because bed bugs by nature are secretive and many people fail to develop visible bite symptoms. Even if bite symptoms do develop, people unfamiliar with bed bugs often confuse bite symptoms for mosquito bites, flea bites, scabies or other non bed bug-related causes, enabling the infestation to continue to proliferate undetected.

Early identification of a bed bug infestation is critical to solving the problem as well as managing the costs associated with eradication. Once an infestation becomes well established, the costs associated with control are much greater than if the infestation has been identified during its early stages. Additionally, once an infestation has established itself, it can move through walls, floors, and halls. A single apartment that goes untreated can become the reservoir for the whole building.

The content of an ongoing public awareness campaign should be simple, with messages describing what bed bugs look like and how they can be detected. It should emphasize that any person can bring a bed bug into their home; that it is not restricted to poor housing or other socioeconomic factors. Appendix B - Core Educational Messages contains a table of recommended statements as suggested content for an ongoing awareness campaign.

There are several cost-effective channels for communicating these messages. The English version of a publication recently released by the Department of Health and Mental Hygiene (DOHMH) entitled "Preventing and Getting Rid of Bed Bugs Safely" (hereafter "DOHMH bed bug guide") is already available upon request by calling 311. English, Spanish, and Chinese versions are available online. The DOHMH guide should be available to City workers who directly deal with the public. It should also be made available in strategic places and organizations that interact with the public, such as public libraries, the offices of public officials, community based organizations, hospitals, and clinics. Property owners should also be enlisted to provide the DOHMH bed guide to tenants upon moving into a

residential unit or upon renewal of a lease. Schools can send useful bed bug identification and management information home with kids. The health community should be educated about bed bugs so that they can better serve their patients and communities. Information provided by 311 should be improved and expanded under the direction of the Bed Bug Team (see Recommendation 3.1) and should include answers to the most common bed bug questions.

Effective implementation will require funding for the development of a creative low-cost multi-media awareness campaign, including web-based outlets, as well as the cooperation of a bed bug expert and a marketing agent. There are numerous low cost opportunities for educational outreach including Community Boards, the Department of Consumer Affairs (DCA), the Department of Housing Preservation and Development (HPD), the Board of Elections, and the Department of Education (DOE).

Recommendation 1.2: Provide bed bug training to stakeholders.

Training is an extremely important component that should be offered and tailored to stakeholders, including, but not limited to, superintendents, property owners, City workers, pest management professionals, and staff working in the residential setting.

Ideally, a Bed Bug Academy should be established. The Academy would provide comprehensive training to stakeholders in the public and private sector. Priority targets should include pest management professionals and building and property managers.

Given current economic constraints, a pilot training program should immediately be rolled out, at the very least. This training should be developed for and offered to the audiences listed above while funding is secured in the long-term to establish a Bed Bug Academy. Over time, the half-day training can be developed into a more intensive curriculum.

In addition, the online interactive video developed by HPD should be featured more prominently on City websites with a less rigorous registration process. HPD should collect registrant information, but it should be a smoother and easier registration process.

Recommendation 1.3: Launch and maintain an online Bed Bug Portal devoted to bed bug facts and resources.

A NYC Bed Bug Portal would provide an accurate, consistent, and accessible source of information to the public. Similar to the successful Rat Portal, Environmental Health Tracking Portal, and Affordable Housing Portal, a Bed Bug Portal would serve as an outreach tool where residents could download fact sheets and educational resources, view instructional videos or slide presentations, and find other documents. It could also provide tools such as inspection forms, contract language, and the elements of a training curriculum that City agencies, property owners/managers and other institutions can adapt to their own needs. To minimize inconsistencies and dissemination of misinformation, examples of which

the Advisory Board has encountered, the portal would be maintained and vetted by experts, such as the proposed Bed Bug Team and/or Bed Bug Working Group.

In particular, New Yorkers should have step-by-step instructions on how to control bed bugs in their homes and possessions. This should include information about their rights and responsibilities, and what to do to prevent, confirm and manage an infestation. Information exists but there is great inconsistency. Landlords should have information about their role in bed bug management, as well as facts about spread, prevention, legal issues, and appropriate methods of gaining cooperation from tenants. They also should have protocols for dealing with the movement and discarding of bed bug infested items within their buildings, and contract language to include with leases that requires the provision of access in the case of bed bugs.

The portal should also offer statistics by district. This level of transparency would help to keep all stakeholders informed about what areas of the City are disproportionately affected and may be serving as a reservoir. This will facilitate more effective allocation of services by City agencies and other entities and provide data that will help solicit federal funds in the future.

Below is a suggested list of the minimum information that should be included in the Bed Bug Portal:

- Information for general public
 - Fact sheet: (General biology, Risks / Transmission, Location / Inspection, Treatment, Proactive measures, Myths)
 - Travel precautions / recommendations
 - Guidelines for choosing a pest management company
 - Dealing with bed bugs in non-residential settings
 - Housing rights and responsibilities FAQs
 - City resources
- Information for landlords/tenants
 - What to do if you think you have a problem
 - Proactive steps landlords and tenants can take, individually and collaboratively.
 - Housing rights and responsibilities FAQs
- Information for pest management professionals
 - Fact sheet: (General biology, Risks / Transmission, Location / Inspection, Treatment, Proactive measures, Myths)
 - Useful resources (links, articles, books, etc)
 - Training videos
 - Upcoming events and opportunities
- Information for city agencies
 - Fact sheet: (General biology, Risks / Transmission, Location / Inspection, Treatment, Proactive measures, Myths)
 - Training videos
 - Upcoming events and opportunities
 - Bed bugs in City offices
 - Tips for social service providers
 - Model contracts / RFPs
 - Laws and legislation
- Information for social services and health care providers
 - Fact sheet: (General biology, Risks / Transmission, Location / Inspection, Treatment, Proactive measures, Myths)
 - Training videos
 - Personal protective precautions

Part 2. Treatment and Remediation

Recommendation 2.1: Establish protocols for proper disposal of infested items.

Although the scavenging of discarded items is against City law, the improper disposal and subsequent collection of infested items is thought to be a major pathway for the re-infestation and spread of bed bugs in both residential and non-residential settings. By identifying and promoting proper disposal procedures, the City can reduce scavenging and therefore prevent the deliberate or inadvertent introduction and re-introduction of bed bugs.

While it is often unnecessary to dispose of household items infested with bed bugs (many things can be treated, or encased and saved) guidelines for disposal of heavily infested, unsalvageable items should be created. At a minimum, the guidelines should include disposal instructions for all bed components, upholstered furniture, and other large items. The Department of Sanitation and City recycling programs, as well as the Department of Consumer Affairs should be included in these discussions to identify feasible disposal procedures (see Appendix E - Suggested Guidelines for Disposal of Bed Bug Infested Items).

While the Advisory Board realizes that identifying discarded items as bed bug-infested may present certain challenges, we feel that it is still important to label items to protect the public and to manage the spread of bed bugs.

Recommendation 2.2: Develop suggested minimum pest management practices.

At the current time “best practices” do not exist for pest management professionals, City agencies or the public for responding to reported or suspected bed bug infestations. As a result, significant disparities exist in the approaches taken by pest management specialists, and it is difficult for recipients of bed bug services to evaluate which methods are most appropriate or safe. Scams and fraudulent services are becoming increasingly common. The Bed Bug Advisory Board has already developed an initial guide, “Suggested Pest Industry Guidelines,” featured in the appendix of their report. Ongoing efforts will ensure that basic guidelines are incorporated into citywide bed bug management efforts.

Recommendation 2.3: Create guidelines for the donation of used and second-hand items.

As bed bugs can be easily and unwittingly transported in items for donation such as coats, clothing and appliances, educational awareness should be focused on avoiding the redistribution of infested items to families and charitable organizations.

Contributors should be informed of the need to launder/dry or dry clean and bag clothing prior to donation. Detailed information should be included, such as the fact that normal dry cleaning kills bed bugs, but “green” dry cleaning may not kill them. Collection centers should bag received items and take

appropriate measures such as hot-drying suspect items prior to their redistribution. In addition they need to keep items bagged, post-collection, to protect their own facilities.

Recommendation 2.4: Develop triage approach for immediate response.

Residents need a step-by-step guide for what to do within the immediate 24 hours upon discovering bed bugs in their homes. This guide should also explain what *not* to do, to avoid exacerbating a problem. The Bed Bug Team should develop a clear and empowering guide listing immediate self-help steps to help protect residents, prevent panic, and encourage patience and persistence. Triage steps would include (but are not limited to) laundering, cleaning, making decisions on property disposal, and contacting appropriate resources for more information. The guide should emphasize avoiding dangers such as insecticide foggers, improper disposal of items, and inadvertent spread of bed bugs within the home (see Appendix D – Best Practices for Tenants and Property Management).

Recommendation 2.5: Offer guidelines for self-remediation.

Many people will immediately take bed bug control into their own hands, while awaiting response from a landlord or pest management company. A resident needs to understand the proactive steps he or she should take, in both the short- and long-term, in order to avoid exacerbating conditions and possibly hampering subsequent control efforts.

While such self-remediation information exists, including the new DOHMH bed bug guide and the “Guidelines for Prevention and Management of Bed Bugs in Shelters and Group Living Facilities” from Cornell University, many individuals, organizations, and agencies are unaware of these resources. The Bed Bug Portal is ideal for publishing and disseminating these resources electronically at minimum cost. The City should also offer hard copies to residents with limited access to the internet, as requested.

Part 3. Monitoring and Policy

Recommendation 3.1: Assemble a Bed Bug Team, headed by a qualified entomologist or equivalent professional and support staff, to coordinate Citywide bed bug efforts in conjunction with a Bed Bug Working Group.

The creation of a Bed Bug Team, housed within the DOHMH, is essential to evaluate and implement effective bed bug policy and control efforts on a Citywide basis. It is critical that the City engage the services of an experienced entomologist, or equivalent professional, to direct the City’s bed bug prevention and treatment efforts, to prevent the duplication and waste of scarce resources, and to hone effective control strategies. As bed bugs are a dynamic pest with continually evolving scientific guidance and management approaches, it is necessary to have an informed body of expertise and

unified course of action on these issues.

In addition to the Bed Bug Team, a Working Group should be created to serve in an advisory capacity and to provide a support system to the Bed Bug Team, while also assisting with the implementation of the bed bug program. The Working Group should have administrative support from a Staff Analyst to assist with coordination of the tasks and meetings for the Working Group. Members of the Working Group should include, but not be limited to, pest management professional(s), agency representatives, public health or medical expert(s), academics, a housing court representative, tenant advocate(s), property management representative(s) and social worker(s). It is important that members of the Working Group have a commitment to improving the problem.

The mission of the Bed Bug Team and Working Group would be to:

- Serve as the City experts on bed bugs and bed bug management
- Develop the Bed Bug Portal and its content
- Create a process for specimen identification
- Develop treatment protocols and programs as needed
- Create guidelines that address what is considered a reasonable and expected level of preparation and cooperation on the part of property owners and occupants for bed bug remediation.
- Address bed bug issues among and between various City agencies through education and coordination of efforts and resources
- Provide and facilitate educational outreach to stakeholders and City residents
- Coordinate community resources to assist people with unique needs and/or limited resources
- Advise, facilitate and assist social enterprise and small business start-ups to provide low-cost bed bug services
- Analyze existing data that has been collected by 311 and other agencies to identify trends and to determine priorities
- Identify an effective reporting mechanism that collects accurate infestation data and can be used to direct future priorities and policies
- Collaborate with existing research institutions and seek creative funding opportunities (i.e. Federal grants, public/private partnerships) to promote advancements in effective bed bug management and education
- Find ways to disseminate consumer warnings about bed bug risks from used furniture and used mattresses

A dedicated Bed Bug Team working in close coordination with a Working Group will provide coherence and direction to the City's bed bug prevention and treatment efforts, effectively target scarce resources, and develop and implement an evidence-based long-term control strategy.

Recommendation 3.2: Develop integrated monitoring, tracking, and reporting tools.

New York City should improve and expand systems to capture data about bed bug infestations. The City should evaluate, improve and, where possible, integrate reporting channels that are maintained separately in the form of bed bug information calls, complaints, and reports by the Department of

Information Technology and Telecommunications (DoITT), HPD, NYCHA, DOE, and other agencies.

The City should next develop data collection mechanisms to identify characteristics and patterns of infestations. Of critical importance is the identification of bed bug infestations that are well-established and at risk for further spread. City agencies should track the progress and outcome of persistent infestations at the same address and infestations reported by residents who do not have adequate support to cooperate with bed bug treatments. In order to address areas which may serve as bed bug reservoirs, the City should be able to identify the density of infestations at building- and block-level. This will enable effective use of educational and enforcement resources, such as the supervision of pest management plans under the City's health code (see Recommendation 3.6).

Bed bug infestation data and maps at the community-district level should be made available to the public via all standard channels, on the Bed Bug Portal, and in the City's Environmental Public Health Tracking Portal, Neighborhood Statistics, and Local Law 47 Reports.

An accurate understanding of the scope, rate and characteristics of spread will inform decisions about deployment of control measures. Incidence data will support policy and budgetary goal-setting and the allocation of limited resources, and support the access of funding sources for public health education and intervention programs by the City's partners and collaborators. Awareness of the prevalence of bed bug in their neighborhoods and communities will facilitate community-based engagement in prevention and education solutions. A bed bug tracking system should be developed and implemented and once in place, the City should identify ways of encouraging reporting of infestations.

Recommendation 3.3: Improve the Department of Housing Preservation and Development (HPD) bed bug infestation inspection protocols and code enforcement capacity.

City agencies, the City Council, and the proposed Bed Bug Team/Working Group should cooperate in the development of effective policies to address the needs of agencies and the public they serve.

Although bed bug infestations affect New Yorkers of all socio-economic levels, it is reasonable to assume that those who reside in lower-income neighborhoods are more likely to live in buildings where severe bed bug infestations persist for years. While educational campaigns, in-depth trainings and a Bed Bug Portal can substantially reduce the number and rate of spread of infestations, it will not help to eradicate infestations where tenants or building owners are not cooperative. As a result, measures should be taken to compel tenants to report infestations as soon as possible and for building owners to notify and treat in good faith.

- Review HPD inspection/violation process with the goal of increasing capacity and improving response time to inspect all bed bug complaints received.

- Increase HPD Code Enforcement's detection capabilities for bed bug infestations. This includes increasing their ability to identify infestations and increasing the inspection workforce to respond to more bed bug complaints in a timely manner.

When bed bug infestations are not confirmed HPD should provide occupants with resources that provide information on how to go about detecting bed bugs (see Appendix C – Suggested Pest Management Guidelines; Appendix D – Best Practices for Tenants and Property Management; and DOHMH bed bug guide).

Recommendation 3.4: Increase the capability of New York City Housing Authority (NYCHA) to take a proactive stance in preventing and addressing bed bug infestations.

The Bed Bug Team should work with NYCHA to help:

- Explore ways to improve response time to bed bug complaints, through additional resources or protocols.
- Implement best practices (Appendix C - Suggested Pest Industry Guidelines) for inspection and/or remediation of bed bugs in surrounding units.
- Develop an effective tracking system which takes into account the spread of bed bugs between and among units.
- Develop an effective educational program to inform residents in regards to bed bugs (including but not limited to Recommendations 1.1 and 1.2).
- Implement innovative and cost-effective solutions for de-infestation of furniture and personal belongings, such as exploring the use of heat treatment chambers (Chan, 2009; BC Housing, 2009, Pereira et. al. 2009).

Recommendation 3.5: Evaluate the current housing court procedures as they relate to both landlords and tenants and look for methods to compel compliance and access to ensure effective bed bug management.

Due to the probability of rapid spread of bed bugs from unit to unit, the City needs to improve the efficiency in which bed bug related cases are addressed in and by Housing Court. Unless bed bugs are given a higher priority than they currently are, it will be difficult for the City to stem the spread of bed bugs.

Recommendation 3.6: Utilize Article 151 of New York City Health Code to help overcome obstacles associated with bed bug management in buildings with widespread infestations.

Article 151 is a tool that can require owners of buildings with widespread and repeat pest infestations to develop and implement individualized pest management plans. The Bed Bug Team should establish

mechanisms and thresholds to identify buildings that warrant action under Article 151 and ensure compliance. A good plan should include, but not be limited to, the inspection and monitoring of all surrounding apartment units, education and notification of building residents, and implementation of a comprehensive bed bug management plan. The Bed Bug Advisory Board has offered initial guidelines and best practices (see Appendix C - Suggested Bed Bug Management Guidelines and Appendix D - Best Practices for Tenants and Property Management).

Recommendation 3.7: Require landlords to provide written bed bug information to tenants upon lease signing and renewal.

The City should mandate the delivery of a one-page bed bug information sheet to residential rental tenants. This written information should be from a City-approved source (i.e., materials on the Bed Bug Portal). The information provided to tenants should include a photograph of bed bug life stages, a list of signs of infestation and common harborage locations, prominent instructions to report any signs of infestation to the property manager, a description of the rights and responsibilities of property owners and residents (including owner's right of access and the tenant's responsibility to cooperate with the pest manager's instructions), advice on the proper handling and disposal of infested items, and prominent instructions to call 311 to report the infestation if a report to the owner or property manager remains unaddressed.

Recommendation 3.8: Disseminate consumer warnings about bed bug risks from used furniture and mattresses.

In the continued absence of used bedding sanitization standards from New York State, consumers are left without adequate information about the status of sanitized used (refurbished or renovated) bedding. A policy that has been adopted in Chicago is to issue appropriate consumer warnings about purchasing used bedding (Chicago, 2009).

The City should lobby New York State to promulgate and enforce used bedding sanitizing regulations that can prevent the transmission of bed bugs, as well as ensure the safety of institutional and private consumers of used bedding; however, the City should not wait for the State to act, and should actively explore ways to disseminate consumer warnings on its own.

Recommendation 3.9: Encourage small business and social enterprise start-ups to provide bed bug preparation services for low- and moderate-income households.

Thorough room preparation is necessary in order to ensure the effectiveness of bed bug control treatments. The inability of some residents to correctly prepare for professional bed bug treatment is a major cause of treatment failure and further spread of infestations. However, preparation requirements are frequently costly and onerous, entailing laundering all clothing and linen, emptying closets and furniture, vacuuming and cleaning extensively, reducing clutter, bagging possessions, and removing and storing or disposing infested furniture and belongings. Further, residents may be required to complete

these exhaustive preparation tasks within a short period of time before scheduled services, or risk not receiving services. Those who are not physically capable, lack adequate resources, or have many pieces of furniture and possessions to reduce clutter are especially vulnerable.

The City should employ its small business and job development infrastructure, in conjunction with the Bed Bug Team and Working Group, to target the creation of small businesses and social enterprises to provide affordable bed bug preparation and treatment services for New Yorkers with low and moderate income. Social enterprises have been shown to be a proven solution in Toronto to render preparation and treatment services to underserved individuals (McKeown, 2008b, 2009; Toronto Bed Bug Project Steering Committee, 2009; Fragomeni, 2010; ONPHA).

Conclusions

We strongly believe that the spread of bed bugs in New York City can and must be stemmed. The first step is to raise much greater awareness of this public health pest. Awareness is a pre-requisite for early detection of bed bug infestations--and early detection is the key to the mitigation of further spread and to efficient eradication. Because early detection is only part of the solution, we should ensure that sound bed bug management practices are widely known and adopted. Creating infrastructure to address bed bugs in New York City will be essential for the concerted effort to slow and stop their spread.

Above all, it is critical to begin the work of engaging all sectors of society in a broad cooperative effort to fight the spread of infestations. It is well known that the longer infestations are allowed to multiply, the more difficult and costly it will be to achieve control. The Advisory Board is confident that the adoption of the recommendations in this report will vastly improve the quality of life and economic vitality of New York City.

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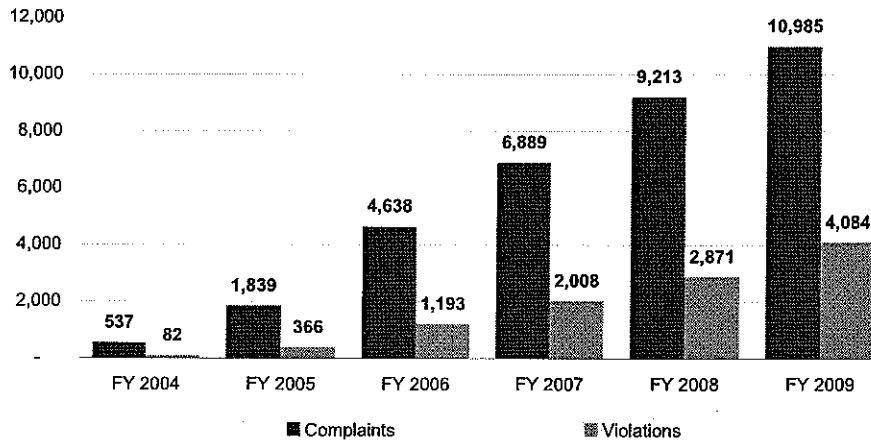
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Appendix A – Statistics and Graphs

HPD Bed Bug Complaints and Violations – 2004-2009



Data source: NYC Department of Housing Preservation and Development

HPD Bed Bug Complaints in the 5 Boroughs – FY 2004-2009

	FY04	FY05	FY06	FY07	FY08	FY09	Percent Increase FY08-FY09
Manhattan	103	425	1,107	1,729	2,107	2,553	21.2%
Bronx	73	187	570	1,117	1,682	2,230	32.6%
Brooklyn	169	659	1,642	2,382	3,401	4,042	18.8%
Queens	190	560	1,278	1,602	1,927	2,029	5.3%
Staten Island	2	8	41	59	96	131	36.5%
TOTAL	537	1,839	4,638	6,889	9,213	10,985	19.2%

Data source: NYC Department of Housing Preservation and Development

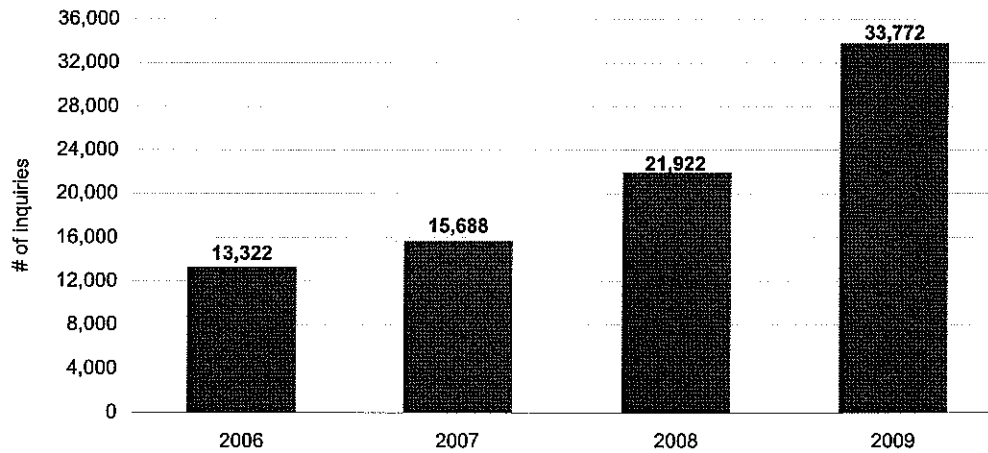
HPD Bed Bug Violations in the 5 Boroughs – FY 2004-2009

	FY04	FY05	FY06	FY07	FY08	FY09	Percent Increase FY08-FY09
Manhattan	17	85	218	437	626	717	14.5%
Bronx	5	34	169	347	546	897	64.3%
Brooklyn	13	125	401	692	1,073	1,729	61.1%
Queens	47	121	388	514	588	678	15.3%

	FY04	FY05	FY06	FY07	FY08	FY09	Percent Increase FY08-FY09
Staten Island	0	1	17	18	38	63	65.8%
TOTAL	82	366	1,193	2,008	2,871	4,084	42.3%

Data source: NYC Department of Housing Preservation and Development

311 Total Bed Bug Call Volume – 2006-2009



Data source: Department of Information Technology and Telecommunications

311 Bed Bug Calls – 2006-2009

Category	2006	2007	2008	2009	Total # of Inquiries
Bed Bug Complaint - Residence	9,601	10,820	14,573	23,790	58,784
Bed Bug Complaint - Public Housing	553	699	1,292	2,369	4,913
Bed Bug Complaint - Other	355	376	436	557	1,724
Bed Bug Brochure	2,813	3,793	5,621	7,056	19,283
TOTAL	13,322	15,688	21,922	33,772	84,704

Data source: Department of Information Technology and Telecommunications

Appendix B – Core Educational Messages

Written for the design and implementation of a city wide educational campaign.

Awareness Topic 1. - Basic bed bug biology and the difficulties of detecting bed bug infestations

Key messages:

- The appearance of bed bugs varies according to their life stage and whether they have recently fed.
- All life stages are visible to the naked eye but may be very hard to identify.
- Bed bugs feed only on blood.
- Bed bugs typically feed when their human or animal hosts are asleep, but they can also feed during the day or feed when the host is awake.
- Bed bugs typically hide and live in cracks and crevices in dark and undisturbed locations close to their hosts. Multiple harborage locations--and less well-concealed harborage locations--appear as the infestation grows.
- Bed bugs do not feed every day; if the number of bed bugs is still low there may be intervals of several days between bites.
- Bed bug bite reactions vary in intensity and appearance (and cannot be positively identified by sight). In some individuals, bite reactions may not be very noticeable or bothersome or may not appear at all. It is possible for family members or other persons living in the same home to have different reactions (or no reaction) to bed bug bites. It is also possible to have a delayed onset of several days or an even longer period of sensitization before the appearance of reactions.
- Live or dead bed bugs, shed bed bug skins, bed bug eggs and fecal spots are more reliable signs of infestation than bed bug bites.
- It is prudent to proactively search for these signs in areas surrounding sleeping and resting areas in the home once a month. Although a small bed bug infestation may be very difficult to detect, it is easier to eradicate.

Awareness Topic 2. - Bed bugs spread between apartments and floors in multi-unit residential buildings.

Key messages:

- Early identification and reporting of infestations by residents to building management limits the spread of bed bugs.
- Inspecting surrounding apartments--the apartments and spaces adjoining the identified infestation on the floor above, below and on all sides--is a recommended practice for multi-unit buildings.
- Sealing baseboards, cracks and crevices, and shared heat, plumbing and electrical services with appropriate pest-proofing sealants can limit bed bug dispersal routes and potential harborage sites.

- It is necessary to coordinate the efforts of the pest management provider, building management, and residents in order to eradicate an infestation and prevent its spread.

Awareness Topic 3. - Disposal of improperly sealed bed bug-infested furniture, mattresses and personal belongings spreads bed bugs.

Key Messages:

- Except as deemed necessary by the treating pest control professional, throwing out infested mattresses, furniture or other household or personal items is not required to eradicate an infestation and should not be routinely recommended.
- Dragging unsealed infested mattresses, furniture or other items from an apartment to the trash may spread bed bugs to other apartments in the building and later to others in the community.
- In cases where a piece of furniture or other household or personal item must be thrown out during an infestation, shrink/pallet wrap or thick plastic bags can be used to securely wrap and seal the item for disposal.

Awareness Topic 4. – Used furniture risks.

Key Messages:

- Used furniture and refurbished mattresses may have bed bugs and bed bug eggs that are difficult to see.
- Spray applications of pesticides or disinfectants do not reliably kill bed bugs and bed bug eggs concealed in used furniture and mattresses.
- Discarded furniture and mattresses, though apparently in good condition, may be infested and should be avoided.
- Bed bugs don't just live in beds. Wood or metal or plastic furniture, sofas, chairs, tables and many other household items may be infested with bed bugs.

Awareness Topic 5. – Anyone or any home could get bed bugs.

Key messages:

- Bed bugs feed only on blood, are attracted only to humans and animals, and are not caused by clutter or dirt.
- There has been a global rise in bed bug infestations in the past decade and other North American cities are similarly affected.

Awareness Topic 6. – Proactive steps against bed bugs.

Key messages:

- Learn how to identify bed bugs and the signs of bed bug infestation.
- Share information about bed bugs with neighbors, family, friends and co-workers.

- Inspect in and around sleeping and resting areas at home once a month.
- Inspect for the signs of bed bugs when traveling away from home.
- If contact with an active bed bug infestation is suspected at any place away from home, segregate and isolate in sealed plastic bags any exposed luggage, clothing and personal effects until inspection and decontamination can be completed.
- Avoid used furniture and mattresses, especially discarded furniture and mattresses.
- Seal box springs in an appropriate zippered encasement to prevent bed bugs harboring inside; this location is commonly affected in bed bug infestations and yet difficult to inspect.
- Pest proofing: seal baseboards, cracks and crevices, and heat, plumbing and electrical services shared between apartments.

Appendix C – Suggested Pest Management Guidelines

This document is intended to provide guidance to pest management professionals by outlining suggested practices for responding to known or suspected bed bug infestation. Additionally this document is intended to assist the public in knowing the types of measures that should be expected from pest management vendors.

Summary of Guidelines

1. Confirmation of bed bug infestation
2. Once an infestation is confirmed
 - a. The pest management professional should determine the extent of the infestation and communicate the appropriate measures that need to be taken.
 - b. Avoid whenever possible disposal of beds, furniture, clothing and other items.
 - c. If infested items are discarded, they must be sealed properly before removing them from the infested area and disposed of in a manner to prevent the spread of bed bugs.
 - d. Treatment preparations should be reasonable and should be based upon the level of infestation and specific conditions encountered in each situation.
 - e. Control efforts should not be limited to the room(s) in which infestation was confirmed, but should extend to all rooms in the home, apartment, condo etc.
 - f. In multi-occupancy buildings, surrounding units should be included in the scope of service.
 - g. A multi-faceted approach is necessary to resolve infestations, including non-chemical methods (such as physical removal of bugs/eggs with vacuums, steaming or freezing of bugs and eggs etc.) as well as appropriate use of insecticides.
 - h. Follow up inspection(s) and additional service(s) (if necessary) should be performed until the problem has been resolved.

There will be differences between residential and non residential settings. For example in non residential settings (such as an office building) some of the additional suggestions include:

3. Disclosure to all staff members
4. Education of all staff members
5. Measures to prevent the spread of bed bugs to and from the workplace

Detailed Description of Guidelines

1. Confirmation of bed bug infestation

An inspection should be conducted to confirm the presence of an active infestation. Evidence of live bed bugs is the only definitive method of confirming an infestation. In the event that live bugs cannot be confirmed, efforts should be made to produce a sample of a live bug. Measures that can be taken to help indicate infestation include the following:

- Educate residents on the how and where to inspect to uncover a low level infestation
- Install interception traps/monitors under the legs of beds and upholstered furniture
- Install encasements on mattresses and box springs
- Monitor with detection devices that are currently available.
- Provide for an additional inspection if complaints persist.

- In multi-occupancy settings, expand the scope of inspection to the adjacent units. This can help to identify a more severe infestation that could be affecting the unit where some evidence of bed bugs has already been found or is strongly suspected.

2. Once an infestation is confirmed

- a. The pest management professional should determine the extent of the infestation and communicate the appropriate measures that need to be taken.
- An estimate for the cost of service should be provided
 - The type and scope of cooperation and anticipated preparations that will be required should be communicated to all concerned parties.
 - The types of materials, labels and methods that will be utilized should be communicated.
 - Obstacles that exist that will prevent the elimination of the infestation should be communicated in as much as possible prior to service.
 - While timely treatment is an important aspect of control, proper preparation must be made to maximize the odds of a positive outcome.

b. Avoid whenever possible disposal of beds, furniture, clothing and other items.

Disposal of beds, furniture, clothing, carpeting and other items can be a financial burden for residents. Replacement items can become infested as well. For these reasons, disposal of infested items should be avoided whenever possible unless:

- The pest management professional determines that the severity of the infested items will make elimination of the infestation very difficult.
- The pest management professional and the owner of infested item(s) should determine that the cost of proper treatment exceeds the value of replacing the item.
- The owner of the infested item(s) is aware of the options to salvage the item but still wishes to discard it.

Options exist for salvaging infested items and should be discussed with the client before the decision is made to dispose of infested items.

- Encasements can be used to salvage mattresses and box springs.
- Hot laundering can be used to salvage clothing or any other items that can withstand a hot dry cycle. Dry cleaning may be an option for some items.
- Vacuuming, steaming, freezing, and some chemical treatments can be used to salvage various types of items including upholstered furniture.
- Other options such as heat chambers or off-site fumigation also exist for salvaging many items, including furniture

**** Note – It may not always be possible to salvage beds, furniture and other items that are infested. In some cases the severity of the infestation coupled with the difficulty of treatment and/or the value of the item may make discarding of an infested item necessary and/or prudent.**

- c. Infested items that are discarded must be sealed properly first and disposed of in a manner to prevent the spread of bed bugs.

Proper disposal of infested items is essential in order to prevent further dissemination of bugs during the disposal process. The following steps are recommended:

- Visible bed bug activity should be eliminated by physically removing or destroying bugs and eggs through vacuuming, steaming, freezing or other suitable methods.
- Infested item should be rendered unfit for use by another individual.
- The infested item should be tightly sealed in an appropriate disposal bag or completely sealed in a suitable material (i.e. shrink wrap or plastic sheeting etc).
- The sealed item should be marked with prominent markings warning that the item is "infested with bed bugs"
- An effort should be made to remove infested items as close as possible to the scheduled day of pick-up by the Sanitation Department.
- Building management should make provisions for proper storage and disposal of possible infested items so bugs do not migrate and items are not available for other tenants or building personnel to scavenge before being removed by the Sanitation Department.

d. Treatment preparations should be reasonable and based upon the specific conditions encountered in each situation.

The preparations provided should not be "one size fits all." Instead, they should be based upon the level and nature of the infestation. The preparations required for a low-level infestation are not likely to be the same as those required for a severe infestation. Similarly, the degree of clutter and other living conditions will affect the extent of the preparations and cooperation necessary. The preparations requested should be based upon the following:

- The severity of the infestation
- The distribution of the infestation within the infested living area
- The degree of clutter
- The physical conditions of the structure
- The difficulty and extent of preparation is justified and warranted by the benefits gained.

e. Control efforts should not be limited to room(s) in which the infestation has been confirmed

It is important to expand control efforts to all rooms within the infested living unit, not just rooms where bugs have been seen or people have been bitten. Bed bugs may be present in sub-detectable levels or may move to areas not previously infested.

In non-residential settings control efforts may need to be expanded to include other areas deemed "at risk" for infestation based upon the activities that occur in those areas. Non-residential settings will require careful consideration on a case-by-case basis to determine the areas to be included in the actual control effort.

f. In multi-occupancy buildings, surrounding units should be included in the scope of service.

Bed bugs can spread readily from infested units to surrounding units in multi-occupancy settings. By expanding the scope of service to neighboring units, infestations can be identified before the occupants are even aware that an infestation exists. Conversely, the source of an infestation may be originating from a neighboring unit that has not yet been identified.

Expanding the scope of service beyond the infested unit is an important step in stemming the spread of bed bugs and can greatly decrease the overall costs associated with bed bug management by identifying infestations before they are permitted to become well established. Pest management professionals should strongly encourage property management to consider the following recommendations:

- Inform occupants of surrounding units that a neighboring unit has an issue with bed bugs.
- Provide education information to occupants of surrounding units familiarizing them with the signs and symptoms of bed bugs and how to recognize an infestation.
- Inspect surrounding units in an effort to identify infestations.
- Utilize early detection tools such as bed bug interception devices, encasements or other appropriate early detection devices that are available.
- Perform scheduled follow up inspections in surrounding units until the initial infestation has been resolved and the likelihood of spread to surrounding unit(s) has been reduced. While costly, failure to include neighboring units is essential in stopping the spread of bed bugs.

g. Utilize a multi-faceted pest management approach

A multi-faced approach is necessary to resolve most infestations and should include non-chemical methods (such as physical removal of bugs/eggs with vacuums, steaming or freezing of bugs and eggs etc.) as well as appropriate use of insecticides. The control effort should include measures that aim to:

- Physically remove or destroy visible bed bugs and eggs
- Address bugs and eggs that are hidden
- Contain and/or minimize the dispersal of bed bugs
- Use insecticides appropriately. When selecting insecticides, consider using more than one type of insecticide taking into account active ingredients, formulations and methods of application that will help maximize the results of the treatment, and reduce the possibility of future pesticide resistance.
- Avoid continued reliance on solely on extensive repeat applications of insecticides.

h. Follow up inspection(s) and additional service(s) (if necessary) should be scheduled until the problem has been resolved.

Rarely are infestations eliminated in a single visit. Follow up inspections should be scheduled in order to ensure that problem has been resolved. Follow up visits should include measures geared towards determining when the infestation has been eliminated. Examples of follow up measures include:

- Surveying occupants to see if they have seen any new activity or experienced any new bites
- Inspections in an effort to identify visible activity
- Monitoring using various bed bug detection devices such as interceptors or other available monitoring tools
- Implementing non-chemical and/or chemical measures, as needed, based upon continued bed bug activity
- Informing client of conditions that exist that are serving as obstacles to elimination of the bed bugs and requesting specific cooperation to overcome obstacles.

- An additional survey or inspection is recommended approximately one month after the problem is believed to be resolved to avoid a rebound effect from an infestation that “appeared” to have been eliminated.
- Addressing other factors and practices that are likely to lead to re-infestation.

****Note: There is not an absolute number of follow up visits that will be necessary.**

Appendix D – Best Practices for Tenants and Property Management

The following information is provided as a set of good practices for managing infestations that work along with pest management recommendations.

For Tenants and Residents

An important proactive measure is to exercise caution when bringing in used furniture, second-hand clothing, or other used items.

If a bed bug infestation is suspected, tenants should try to collect evidence.

- Don't discard anything that you believe is evidence of bed bugs. It is important to preserve suspected evidence for positive identification. There are many pests that are easily confused with bed bugs. Proper identification is essential.
- With active infestations, fecal spotting, live or dead bed bugs, shed skins and eggs may serve as signs of activity.
- Insects should be placed in a container to avoid their escaping or being crushed. The specimen can be made available for examination by a qualified person.

Don't wait to report suspected or confirmed infestations to superintendent and/or property manager.

- Report the suspected activity to the superintendent/property management as quickly as possible so that they can coordinate pest management services. Don't wait for the positive identification before advising property management. The longer you wait the more likely the problem is to spread and the more difficult and costly it will be to control.
- It is advisable to inform property management in writing.
- It is important to understand that resolving bed bug infestations requires a cooperative effort between the landlord, residents and the pest management firm.
 - Resident must be flexible in providing access to the unit for inspections as well as treatments.
 - Residents must follow any other reasonable requests for cooperation provided by the pest management company, including pre-treatment instructions.

If property management fails to respond within a reasonable period of time call 311.

- Calling 311 is recommended in cases where reporting to superintendents and property managers does not lead to an adequate or timely response. Check with 311 regarding the most current accepted practices for collecting evidence of bed bugs.
 - It should be noted that calls from residents of NYCHA will be forwarded to NYCHA's Centralized Call Center.

The following are some common pre-treatment instructions and good practices that can be taken to assist in the management of an infestation. These steps can help reduce an infestation, but it will not eliminate one. Not only is it important to know what to do, but it is equally important to know what not to do.

Hazards to Avoid

- Never use “bombs” (total release foggers). They can be dangerous if misused, can cause fires and explosions and are not appropriate for bed bug management.
- Never use camphor, kerosene, diesel, gasoline, alcohol or other similar products. These products can cause serious health problems and fires.
- Don't use insecticides that do not have bed bugs written on the label. For questions regarding pesticide use contact the New York State Department of Environmental Conservation.

Some action steps that will assist in the management of an infestation include:

Reducing spread of bed bugs

- Do not throw away infested belongings without proper guidance. The pest management company can often treat furniture and can help you decide what can be salvaged and what should be thrown away. Many items can be cleaned and disinfested.
- Do not store infested items in a building storage room; bed bugs will live long enough to migrate away in search of a new host.
- Do not move personal items (furniture, clothing, electronics, etc.) outside of the infested room unless they are securely bagged or wrapped and you are taking them to the laundry, discarding them, or absolutely need to make space.

Reducing clutter

- Start with the area where infestation appears to be present. (This is usually a bed or sofa.)
- Remove anything that is under the bed.
- Carefully discard items that are no longer being used.

Thoroughly cleaning space

- Start in the infested area and move outward. Note that pest management technicians will need to access the cracks, seams and undersides of all furniture in order to effectively treat
- Vacuum apartment and use crevice tools and other attachments where feasible. Bed bugs prefer to live in cracks and crevices in areas like baseboards, moldings, window/door frames, and cracks/seams in walls and furniture, especially headboards and bed frames and screw holes.

Laundering Frequently

- Laundering at temperatures above 140 °F will destroy both bugs and eggs. If water temperatures are below 140 °F items can be placed in a dryer on high heat. This is an effective method for linens, clothing and any other item that can be placed in a hot wash or dryer.
- For clothing and other linens that are already clean, items can simply be put in a dryer.
- Take all items to the laundry room in a sealed plastic bag; place contents directly into the washer or dryer. Seal (with a knot) and throw away the bag. In addition dissolvable bags are also available. When done with laundry, place clean clothes and linens in a clean plastic bag or large Ziploc bag.

Options for items that can't be laundered

- Cleaning items made of plastic, metal and coated wood that can be washed with a mild detergent can aid in the physical removal of bed bugs and make inspections easier. Washing with a mild detergent may not kill or remove all bed bugs and eggs.
- Portable heat chambers, specifically designed for use in heating items infested with bed bugs, are available. Heat chambers can be used to destroy all stages of bugs and may be a useful tool for dealing with items that can be heated but not laundered.

Carefully reintroducing cleaned items.

- Isolate and contain items that have been properly laundered, heat treated or de-infested. Heavy duty plastic bags or air tight containers may be used for this purpose. Clear bags and containers are preferable.

Encasing mattresses and box springs.

- Encasements vary in cost, quality and effectiveness.
- Although there is an expense associated with purchasing encasements that have been specifically designed to be bed bug proof, they are strongly encouraged.
- Encasements for the mattress and box spring greatly diminish bed bug habitat and provide a simple, seamless surface to inspect for bed bugs. There are encasements specially designed for bed bugs that are made of high quality cloth, are breathable, and reduce the expense of having to discard the items.
- Encasements should be left on the mattress and box spring for the life of the mattress unless they have become ripped or torn.
- It is ideal to allow a pest control company to inspect before encasing mattresses and box springs. However, encasement will likely be recommended.

For additional guidance and more information on self remediation refer to:

- "Preventing and Getting Rid of Bed Bugs Safely" A Healthy Homes Guide available through the NYC Department of Health and Mental Hygiene
(<http://www.nyc.gov/html/doh/downloads/pdf/vector/bed-bug-guide.pdf>)
- "Guidelines for Prevention and Management of Bed Bugs in Shelters and Group Living Facilities" NYS IPM Program, Cornell University
(http://www.nysipm.cornell.edu/publications/bb_guidelines/default.asp)

Property Managers, Superintendents and Maintenance Staff

Early Detection is Critical

Reporting procedures should be established to encourage tenants to report known or suspected bed bug activity immediately and to inform other tenants of infestations.

- Written information should be distributed to new and current tenants.
- Written information should contain a fact sheet and letter encouraging tenants to report as soon as they suspect that there is an infestation.
- Coordinate workshops and/or regular meetings/updates to tenants about bed bugs.

- The reporting process should encourage residents to report infestations without fear of blame or negative consequences.
- Reporting of infestations is critical in managing the spread, severity and costs associated with bed bugs.

Train staff to identify and report bed bugs

- Provide training for staff on prevention and management. For example, use materials available from the proposed Bed Bug Portal.
- Encourage staff to be proactive in identifying and reporting.
 - For example, superintendents and maintenance staff should examine furniture being disposed by tenants for evidence of an infestation and report to their supervisor.
- Coordinate workshops and updates for staff about bed bugs.

Develop a procedure for handling bed bug infested items from infested unit to curbside

- Require items to be discarded appropriately.
- Advise that tenants wrap items in plastic sheeting or other appropriate material before moving.
- Offer assistance in the removal of infested bulky items when residents request help.
- If feasible, an area in the building should be designated and marked for storing these items between trash pick-up dates.

Implement an equipment loan mechanism

- Superintendents can be trained to teach tenants how to effectively use tools (such as HEPA-filtered vacuum cleaners) and how to properly maintain them between each use.

Once an infestation is positively identified:

- Ensure that the pest control firm has access to adjoining apartments for inspection.
- Inform and educate tenants in adjoining apartments.
- Ensure that units are re-inspected after treatments until the problem is abated.
- Sealing cracks, crevices, gaps around utilities and other openings helps to prevent the movement and sheltering of other pests such as rodents and cockroaches and may be helpful in reducing the spread of bed bugs. This can be especially helpful when infested units are vacated.

Appendix E - Suggested Guidelines for Disposal of Bed Bug Infested Items.

Proper disposal of bed bug infested items is essential, due to the role improperly discarded or stored infested items can play in the further spread of bed bugs.

When items are placed on the street for pick up, they should remain sealed or wrapped and a sign should be affixed indicating that these items may contain bed bugs. A standardized sign should be developed by the City for this use. This can help reduce reintroduction by scavenging or recycled through used furniture vendors.

To avoid the possible spread of bed bugs in a building, all items should be properly wrapped, bagged or otherwise contained to prevent migration of bed bugs off the infested items as they are moved through the building for disposal. Items such as mattresses, box springs and other high risk items should be rendered unusable prior to being wrapped for disposal.

Whenever possible, buildings should create a designated area for storing properly contained bed bug infested items which will inhibit scavenging or removal of items by staff and thereby spread bed bugs.

Management should be notified prior to removal so that properly contained materials can be taken to the designated secure area in the building to await disposal. Items should not be stored in refuse areas on the individual floors as this promotes scavenging and, if not properly contained, possible migration of bed bugs.

Please note that sections of other Appendices also contain related information in regard to the disposal of bed bug infested items, as follows:

From Suggested Pest Management Guidelines

- a. Infested items that are discarded must be sealed properly first and disposed of in a manner to prevent the spread of bed bugs.**

Proper disposal of infested items is essential in order to prevent further dissemination of bugs during the disposal process. The following steps are recommended:

- Visible bed bug activity should be eliminated by physically removing or destroying bugs and eggs through vacuuming, steaming, freezing or other suitable methods.
- Infested item should be rendered unfit for use by another individual.
- The infested item should be tightly sealed in an appropriate disposal bag or completely sealed in a suitable material (i.e. shrink wrap or plastic sheeting etc).
- The sealed item should be marked with prominent markings warning that the item is "infested with bed bugs"
- An effort should be made to remove infested items as close as possible to the scheduled day of pick-up by the Sanitation Department.

- Building management should make provisions for proper storage and disposal of possible infested items so bugs do not migrate and items are not available for other tenants or building personnel to scavenge before being removed by the Sanitation Department.

From Best Practices for Tenants and Property Management

Reduce spread of bed bugs

- Do not throw away infested belongings without proper guidance. The pest management company can often treat furniture and can help you decide what can be salvaged and what should be thrown away. Many items can be cleaned and disinfested.
- Do not store infested items in a building storage room; bed bugs will live long enough to migrate away in search of a new host.
- Do not move personal items (furniture, clothing, electronics, etc.) outside of the infested room unless they are securely bagged or wrapped and you are taking them to the laundry, discarding them, or absolutely need to make space.