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Title: Recent Experience with Increasing Bed Bug Infestations in Michigan's Communities

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Executive Summary:

Bed bug infestations in Michigan and across the U.S. have become an increasing public health issue and have placed considerable strain on homeowners, housing providers, tenants, social services agencies, and government agencies. Bed bugs spread through the movement of infested items, and may spread readily through buildings once infested. They are not a reflection of poor sanitation or hygiene.

Bed bug infestations cause measurable health and financial consequences and disproportionately impact low-income populations. Recently, the Michigan Department of Community Health (MDCH) has received increasing complaints from the public, and requests for guidance, education, and training regarding bed bug issues in all areas of communities. Historically, no state appropriations are available to control bed bugs. An ad-hoc Michigan working group has been established to investigate current best-practices and regulatory impacts, and provide guidance to citizens and agencies experiencing bed bug infestations.

The labor and cost involved in eradicating bed bugs is high, and is especially apparent in multi-unit housing. Local and state agencies have been thrust into the debate between landlords and renters about the responsibility for eradication and who covers the cost. Bed bugs are also being detected in schools, hospitals, libraries, public transportation, and other government facilities that serve the public. This places a burden on publically funded institutions through increased facilities maintenance and pest control expenditures.

A major concern for the MDCH is that homeowners, tenants or landlords who cannot afford pest control services will attempt their own pest control, and in the process harm themselves, their families, or cause property damage. This concern has also been expressed in a November 2012 Health Alert released by the U.S. Centers for Disease Control and Prevention in response to growing reports of incidents nationally (CDC HAN-0336-2012-11-27-ADV-N).

Other concerns that impact bed bug infestations in the community include:

- Declining local revenues that impact a communities ability to inspect, confirm, and address complaints in multi-unit housing, hotels/motels, and businesses
- Lack of public education which allows for the unintended spread of bed bugs in the community
- Lack of specific regulation in this area which may cause citizens to have to seek legal counsel for housing rights issues or financial remedy

The following brief outlines the Michigan Department of Community Health's recent experience and activities regarding the burgeoning bed bug epidemic.

Statement of the Problem:

For the past several decades Michigan, the United States, and most of North America were virtually bed bug free. Bed bug infestations had become so rare that many entomologists and pest management professionals had never seen a live specimen, and bed bugs were no longer considered a public health threat. This was due primarily to improved sanitation and widespread use of insecticides like DDT after World War II. Many people believed that these parasites were just an imaginary specter from a popular bedtime phrase, "...sleep tight, and don't let the bed bugs bite!"

Recently, however, bed bugs have made a dramatic resurgence. Human safety and environmental concerns have led to greater restriction of pesticides and pest management practices, while at the same time bed bugs have developed resistance to many widely used pesticides. The global connectedness of markets allows for goods and business-travelers from regions where bed bugs are common to be more widely dispersed. Couple this with the increased mobility of many segments of society including tourism, domestic and international travel; and it is a perfect setting for the rapid spread of infestations. In the past few years, bed bugs have increasingly been infesting hotels, shelters, hospitals, universities, schools, apartments, and homes. Bed bugs don't discriminate; they will infest any human dwelling, from the most cramped student apartment to the most luxurious four-star hotel.

Bed bugs are difficult to control because they are so skilled at hiding, which allows them to travel in people's belongings (clothing items, luggage, furniture, electronics, etc.) without being noticed. Most people do not even realize when they have visited a location that is infested, and bring the bed bugs back to their residence unwittingly. Once established in a residence or unit in a building, the bed bugs can quickly spread to neighboring rooms or apartments.

The bed bug's blood-feeding lifestyle requires that it dwell in close proximity to humans. The physical effects of bed bug bites vary widely, ranging from minimal skin irritation to permanent scarring and allergic sensitization. While blood-borne pathogens have been detected in recently fed bed bugs, there is no evidence in the literature that they transmit communicable diseases between people. Other health and economic effects may include:

- Psychological effects such as mild to severe anxiety, stress, and insomnia
- Isolation from friends and family due to stigma or fear of spreading the bugs
- Sufferers may have to dispose of infested furniture and belongings, leading to both financial and psychological stress
- Secondary bacterial infection from scratching bites
- Some people are driven to take extreme actions to rid themselves and their homes of these pests, potentially harming themselves and their families with pesticides or other hazardous methods.
- Anemia
- Potential exacerbation of asthma symptoms

The above health issues associated with bed bugs led the Centers for Disease Control and Prevention and the United States Environmental Protection Agency to declare in 2010 that bed bugs are an "Emerging public health issue."[‡]

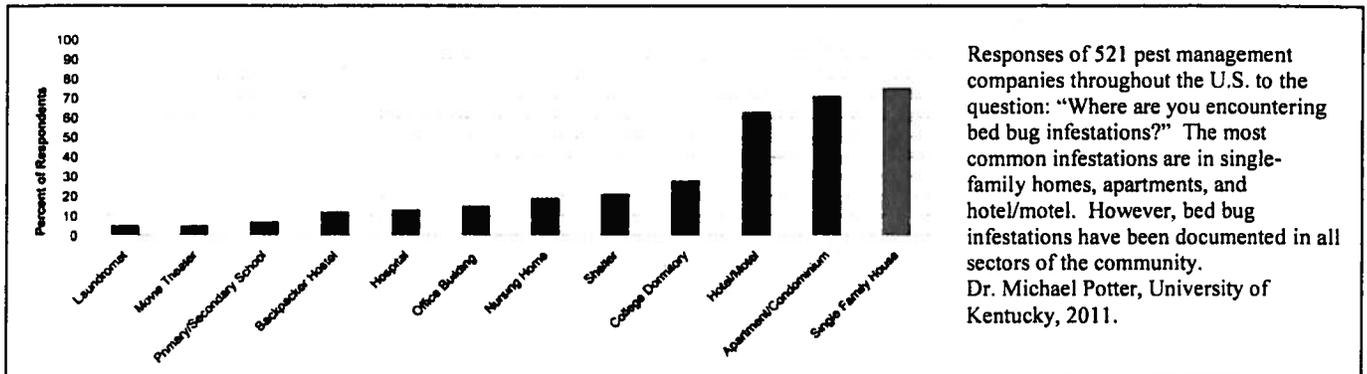
In recent years, the Michigan Department of Community Health (MDCH) and Michigan local health departments (LHD) have seen an increase in complaints of bed bug infestations in the community. Initially most complaints came from occupants and owners of multi-unit housing, homeless shelters, and visitors to Michigan hotels/motels. Recently, however, bed bugs have been reported from every sector of Michigan's communities including:

- Apartments/condominiums
- Single family homes
- Hotels/motels
- Healthcare facilities including hospitals and physician's offices

[‡] Centers for Disease Control and Prevention and U.S. Environmental Protection Agency Joint statement on bed bug control in the United States from the U.S. Centers for Disease Control and Prevention (CDC) and the U.S. Environmental Protection Agency (EPA) Atlanta, U.S. Department of Health and Human Services, 2010

- Long-term care facilities serving the elderly and mentally handicapped
- Government buildings, especially social-services agencies
- Schools, daycares, and camps
- Emergency medical services vehicles and fire stations
- Public transportation
- Community centers and libraries

The locations reported in Michigan are similar to what is being seen throughout the U.S. The graph below summarizes the results of a 2011 survey by Dr. Michael Potter of the University of Kentucky.



Many areas of the state have been affected, although the highest proportion of infestations and rapid spread occurs in Michigan's urban centers. In these regions, infestations have increased to epidemic levels. A 2009/2010 survey of Michigan's local health departments and information from several large pest management companies point to widespread infestations (see map below).

The nature of the public's complaints vary, and speak to the complicated nature of dealing with bed bug infestations. Examples of citizen and facility manager concerns are:

- Protocols or recommendations for preventing and treating infestations in shelters, rehabilitation centers and adult foster care facilities. Facilities with clients who are transient are difficult to safeguard.
- Should high-traffic locations that serve the public (examples include hospitals, libraries, and social services agencies) treat their facilities for bed bugs every time they are detected? What will the impact be on facility budgets?
- Should children be excluded from school if they have bed bugs on their bags or clothing?
- Worker protections; how do employees who make home visits to potentially infested locations assure they don't bring bed bugs home or back to the office with them?
- Resale of used potentially infested furniture items; what agency is responsible for safeguarding the public against distribution of infested items, and are there regulations pertaining to sanitation of such items?
- Multi-unit housing issues; who is responsible for the payment for treatment (landlord, tenant, or shared)? Breaking of leases? Landlord responsibilities for "vermin-free" housing? Tenant responsibilities?
- Treatment by professional pest management may exceed \$1,000 for a small single-family apartment, what resources are available for people who can't afford it?
- Inexperienced or unlicensed pest management may take advantage of uneducated consumers and not solve the problem, and potentially make the problem worse.
- Concerns about the inappropriate use of pesticides leading to injury or death. A recent Health Alert from the Centers for Disease Control and Prevention highlights proper and safe use (<http://emergency.cdc.gov/HAN/han00336.asp>).

MDCH response:

In 2009, in response to growing public concern and in coordination with various state and local agencies and private groups, the MDCH Zoonotic Disease and Special Projects Section within the Division of Communicable Disease created an ad-hoc Bed Bug Working Group. The group's aim is to bring clarity to existing environmental health regulations and to provide guidance for the public and private sector. Many informational and guidance documents have been created for the public and a bed bug-specific website was created within Michigan's Emerging Diseases website (www.michigan.gov/bedbugs) as an outlet for those materials. A notable achievement of the group has been the release of a nationally recognized bed bug prevention and control manual that is specific to Michigan's laws and regulations. The manual combines biological information, prevention and control for site specific situations, and legal aspects into a unique package. In addition, recently the Michigan Department of Community Health in conjunction with Michigan State University Extension released a brochure entitled "Getting the Bed Bugs Out." This brochure is meant for homeowners experiencing bed bug infestations, and who are trying to rid the home of the bugs themselves. Knowing that the public will try "do it yourself" treatment, this brochure outlines effective and safe strategies the public should consider.

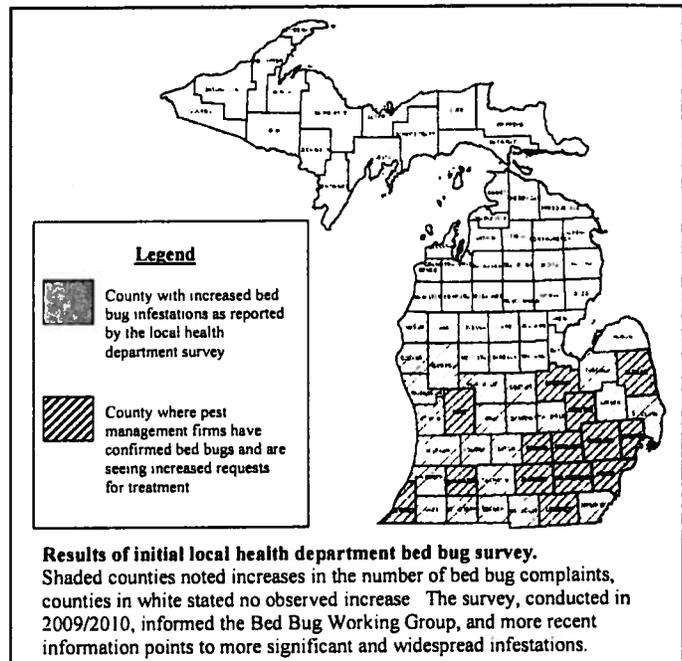


Members of the MDCH Zoonotic Disease and Special Projects Section have also planned and participated in numerous training and education events for public and private groups including:

- Property managers, landlords, and property maintenance personnel
- Housing officials and local code enforcement officers
- Homeless shelter administrators
- Local health department personnel
- University students
- Pest management professionals
- Recreational camps
- Medical care providers
- Social services providers and government employees

These training and education events have reached thousands of Michigan citizens.

Group members also assist in certain difficult infestations as consultants. Often this entails bringing private and regulatory agencies together to create an individual plan for eradication. This may result in additional recommendations and materials for agencies and the public, such as schools, daycares, and recreational camps. Michigan was one of the first states to draft a comprehensive school policy for bed bugs (MDE and MDCH joint) which is available as part of the manual.



Current Challenges:

The cost of bed bug control (potentially >\$1,000 per unit or home) is often prohibitive to low-income homeowners. There is danger that homeowners or other tenants will attempt to control bed bugs on their own and subsequently harm themselves or others by misusing pesticides. Nationally there have been injuries and property damage from the misuse of "bug bombs", alcohol, gasoline, and other accelerants. On November 27, 2012 the U.S. Centers for Disease Control and Prevention (CDC) assessed the situation as urgent enough to distribute a health alert regarding the misuse of pesticides for bed bug control (emergency.cdc.gov/HAN/han00336.asp). The MDCH also tracks reported acute pesticide exposures, and were co-authors of a publication in the CDC Morbidity and Mortality Weekly Report describing acute illnesses associated with insecticides used to control bed bugs from 2003-2010 (September 23, 2011/60(37): 1269-1274). Although MDCH has published a guide for homeowners which outlines techniques for bed bug control and emphasizes safety, many homeowners still resort to dangerous pest control practices out of ignorance, misinformation, or desperation.

The Michigan Department of Agriculture and Rural Development (MDARD), a partner agency in the working group, has provided expertise and guidance for issues related to pesticides, certification, licensing, and guidance to the public for choosing appropriate pest control. This is also important information for the public to understand and will be part of all Michigan educational materials related to bed bugs.

The costs of bed bug management escalate quickly in multi-unit housing. The connectedness of units and buildings allows bed bugs to spread rapidly. Tenant reporting of infestations is often delayed by fear of social stigma and financial costs, which only allows the bed bugs to spread even further throughout a building or facility. Once many units are infested, it takes many hours of education, preparation, and treatment to control. This can amount to tens of thousands of dollars in costs, with no guarantee that the community will remain bed bug-free in the future. The only true control for bed bugs is a concerted and continued pest management strategy that employs education, monitoring, and prompt reporting and control. Understandably, to avoid these costs property managers or landlords may wish to try and employ their own maintenance personnel, or simply ignore the problem, which is ineffective in a vast majority of cases. During this time, residents are then either a) forced to live with the problem, b) attempt their own control, c) temporarily or permanently move (potentially spreading bed bugs to their new home). This cycle may become entrenched in communities, and there are some that hypothesize that bed bugs may actually depress communities socially and economically:

"Apparently, because these infestations can become an endless, cyclical problem for those living in poverty, some authors have claimed that bedbugs may help cause poor living conditions – not just being typical of them." World Health Organization, Public Health Significance of Urban Pests (2008).

To partially fund bed bug work, MDCH staff competed for and were recently awarded a grant from the U.S. Environmental Protection Agency (EPA) to educate the public, private, and governmental sectors in Detroit about sound, community-wide bed bug prevention and management strategies. This small grant has allowed MDCH to reach out to community organizations in a small, targeted area that is highly affected by bed bug infestations. This grant provides funding for two years, and is limited in its scope. It is one-time funding only.

Finding partner agencies at the local level to respond to, and regulate bed bug infestations has also become more difficult. Michigan's local communities are dealing with many fiscal issues and many have had to make tough decisions to cut services including rental inspections, code enforcement, environmental health services, and social programs. When there is no local agency responding to bed bug complaints from homeowners, renters, landlords, and property managers, the infestations spread.

While current projects focus on public education, and the coordination of agencies to combat bed bugs in publicly funded facilities; **we have identified no funding to directly assist private citizens or property managers or tenants with the cost of combating bed bugs.** The recent EPA award is limited to educational and outreach purposes only. Some federal and state funded facilities may be able to apply

for assistance monies through their respective agency to combat bed bugs, but the only identified route of assistance for citizens is through a small fund called the State Emergency Relief program. This program is only accessible to those Michigan citizens who own their home, and are receiving assistance from the Michigan Department of Human Services. The program's original intent is to assist low-income home owners with repairs such as HVAC or structural issues. Bed bug or other structural insect infestations may be allocated funds based on availability.

Legislative and Regulatory Concerns:

Public Health Code: Section 2455 of the Public Health Code appears to authorize local public health departments to act to protect tenants and consumers from bed bug infestations: "(1) A local health department or the department may issue an order to avoid, correct, or remove, at the owner's expense, a building or condition which violates health laws or which the local health officer or director reasonably believes to be a nuisance, unsanitary condition, or cause of illness." The code further outlines the use of warrants to inspect premises for infestations and assessing fines. Even though local health departments should have authority to intervene, few departments exercise this authority for reasons that may include their lack of resources to act to protect the public from infestations. This combined with current local economic realities make it difficult for local health departments to maintain current services, let alone take on bed bug control as a priority. Additionally, some local health departments are uncertain about their authority because the Public Health Code includes nothing about bed bugs, or even "vermin" in general; further, local health regulations that cover "vermin" do not specifically include bed bugs. Finally, public health staff lack expertise regarding bed bug identification and response; and would require enhanced integrated pest management training.

Michigan Housing Law: Other local agencies often have primary authority for licensing and housing issues. One agency type is the local code enforcement agency or buildings safety/engineering agency. In most communities, multi-unit rentals must be licensed, and it is these agencies that make sure the buildings are up to code and meet Housing Quality Standards. Some local agencies have responded by citing properties with bed bug infestations. However, as stated previously, many communities have had to make tough decisions about the services they offer. This has resulted in many communities having limited code enforcement and/or code enforcement personnel who lack the training and expertise needed to address bed bug problems.

Michigan housing law covers "vermin" in multi-unit rental housing and provides for the enforcement of law by local city or township officials in many – but not all - communities. The process of assessing fines against property owners/managers may be used by local housing and code enforcement officials when licensing or enforcing housing standards. In most cases, the enforcement of sanitary housing practices in residential, multi-unit housing will fall to local housing officials. Enforcement of sanitary conditions and "vermin" in other regulated facilities will normally be handled by the regulating authority, although public health may be called on for consultation and maintains broad authority over issues relating to the health of the community (an example of regulating authorities is attached to this document).

The law states that landlords are responsible for maintaining their properties, however the tenant may be held financially responsible if they have "caused the nuisance." MDCH has received reports of tenants who are charged for extermination of their unit; some move because they are unable to pay. The problem is that in most bed bug infestations, it is not clear where the bed bugs came from. The tenant could have inadvertently brought them in, or they could have been there before the current tenant moved in, or they could have come from a neighboring unit. Disputes over who is responsible are common. As a result, residents may be hesitant to promptly report infestations (for fear of being billed for expensive treatments) and/or treatment may be delayed; this can allow infestations to spread throughout the building and community. The Michigan Department of Community Health developed a pamphlet for tenants and landlords/property managers outlining best practices and expectations for bed bug management but has only recently identified funds to print the materials. The pamphlets have also been translated into Spanish and Arabic.

Hotels: Hotel and motel bed bug infestations present an interesting case of public health, code compliance, and consumer protection. There is currently no specific legislation that regulates the response of a hotel/motel when a bed bug infestation is discovered. Hotels and motels are subject to the vermin provisions in the Michigan Housing Law by definition. However, most jurisdictions code compliance offices choose not to inspect or license the hotels/motels within their jurisdictional borders. Therefore, it is up to the hotel/motel management to decide the best course of action, and whether to continue renting rooms that are infested. The industry group, Michigan Lodging and Tourism Association, has been engaged as a member of the Michigan Bed Bug Working Group. It is the opinion of that organization that their members can be most effective when they self-regulate. This is a valid argument as many hotels/motels don't want the reputation of having bed bugs. Most of these businesses do a good job at responding to consumer complaints, taking infested rooms offline, and treating proactively. However, MDCH has received many complaints relating to hotels/motels that are not members of a trade-group, and rent infested rooms to consumers. When a consumer has a complaint that he/she has been subject to bed bug bites or has potentially taken bed bugs home with them from an infested room, it may be difficult for them to find a local agency that can help to remedy the case because of the absence of specific guidance, and the reluctance of local agencies to inspect hotels.

As previously noted, the local health department also has authority to "correct, or remove, at the owner's expense, a building or condition which violates health laws or which the local health officer or director reasonably believes to be a nuisance, unsanitary condition, or cause of illness." However, most local health departments will defer to the "lead" agency in charge of enforcing housing law. This can create a cycle where the consumer is sent from one agency to another, which all claim that another agency has jurisdiction or that they do not respond to bed bug complaints.

Consumer protection law is the last step for individuals who are looking for remedy to a bed bug issue in a hotel or motel. This is a situation that most citizens are not willing to pursue based on the time and cost required to litigate a case.

Infested Items Distribution: Another area of concern is the distribution of used or refurbished mattresses and furniture items in the community. Enrolled House Bill 5594 of 2000 repealed 1917 PA 54, entitled "An act to provide for the branding and labeling of mattresses and comforts, and to provide against the use of insanitary, unhealthy, old or second-hand material in the manufacture of mattresses and comforts, and to provide against the sale of mattresses or comforts containing such insanitary, unhealthy, old or second-hand materials," (MCL 429.301 to 429.311).

While the language in the 1917 bill was antiquated, it did provide regulation for the resale of mattresses. Under the former regulation, re-distributed mattresses were required to be inspected and sanitized. Since the repeal of the 1917 language, there is currently no regulation of mattress resale, outside of general consumer protection laws. The Michigan Department of Community Health has received complaints of local thrift stores selling bed bug infested mattresses.

Conclusion:

Bed bugs will continue to be a challenge for Michigan into the future. They can affect homeowners, renters, businesses, tourism, and the entire economies of communities. There is no evidence that the level of infestations is leveling or falling. The Michigan Department of Community Health will continue to lead multi-agency efforts to assist Michigan's communities. Increased financial resources for education and response, and enhanced clarity within Michigan's legislative framework may help Michigan to begin to reduce the level of infestations in its communities.

