

Over 101 Things To Know About Bed Bugs

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The original “101 article” was published many months ago and was originally presented as written in no specific order during the writing process. The original list was compiled in response to the numerous questions that had been received in conversations, at meetings, via telephone and e-mail queries. As you will see the list has grown to over one hundred and forty *things* and will likely continue to grow as more is learned.

In an effort to further assist the reader questions have been underlined and the list has been categorized for your convenience to include the following headings:

- ☞ Bed Bug Behavior, Biology & General Information
- ☞ Bed Bug Information of Interest to Hospitality & Housing Professionals
- ☞ Bed Bug Inspection & Detection
- ☞ Bed Bug Dogs
- ☞ Bed Bug Control
- ☞ Bed Bug Tips for Travelers, Homeowners & Apartment Residents
- ☞ Closing Comments

This list of practical and useful things to know about bed bugs was written specifically with the many bed bug victims, hospitality professionals, property management professionals and pest management professionals in mind. Please note that these bits of information were gleaned from years of first hand field experience in dealing with bed bugs and working with industry colleagues across the country. They are present to you the reader in an effort to assist you with your bed bug concerns.

Behavior, Biology & General Information:

1. Do not underestimate them; bed bugs take a lot of knowledge, experience time & effort to deal with successfully.
2. You need to keep a heightened level of vigilance to assure you are properly prepared to detect and deal with bed bugs.
3. Bed bugs can last a long time without feeding. Some references indicate bed bugs can survive about one year without feeding under ideal conditions. Of course we are dealing with live entities and longevity is based upon local conditions. As such, *your mileage may vary*.
4. Generally speaking, bed bugs can not climb smooth surfaces such as glass, some plastics and other such surfaces.
5. In a bed bug video session conducted recently we witnessed an adult bed bug successfully scale a one cup Pyrex glass bowl not once, but twice. Subsequent inspection of the bowl under magnification revealed that the bowl was slightly dirty and there were small ridges in the glass. As such, be sure your pitfall type traps are clean and suitably smooth. Additionally, place a small amount of a suitable dust/powder such as talc as this will help to prevent bed bug escape.
6. We found that adult bed bug “ground speed” on smooth poster board is from about three to four feet per minute. This means that a determined bed bug, if a bed bug can be characterized as “determined”, can cover a significant distance, up to twenty feet in just five minutes, if need be to seek out a host while we’re sleeping.
7. Except for the egg, all stages of bed bugs from nymphs to adults feed on blood.
8. Some experts point out that, if necessary, bed bugs can get a blood meal from other bed bugs. While this may be a rare occurrence, it is possible and it underscores the tenacity of this troublesome pest.
9. Generally speaking, bed bugs can survive cold temperatures very well but succumb to heat rather easily. Recent industry literature sights temperatures of as low as about 113 degrees Fahrenheit for about 30 minutes is sufficient

to kill bed bugs. Industry references and publications indicate a variety of temperatures and duration times to achieve mortality. It is likely best to be conservative to assure you achieve the desired results.

10. Bed bug eggs are tiny. Eggs and first instar nymphs are only about one millimeter long, that's only about 1/32nd of an inch.
11. Female bed bugs glue their eggs to hidden areas which can make them difficult to find and difficult to remove 100% of them, if any, using a vacuum.
12. Bed bug eggs are shaped cylindrical and oval like, rounded at one end with a round flat hatch shape at the opposite end. The round flat end opens like a "round hatch top" when the immature bed bug immature emerges.
13. Bed bug eggs are a shiny, translucent and a milky white color as are the newly hatched bed bug nymphs.
14. Prior to taking their initial blood meal immature bed bugs are translucent and may appear slightly yellowish. Once engorged after a blood meal they take on their reddish color. However, just like your mileage, individual bed bug color may vary.
15. Immature bed bugs maintain their reddish color for as long as they have remnants of their blood meal within their gut. As the blood meal is digested over time they become more and more translucent again.
16. It may take several weeks for an immature bed bug to fully digest a blood meal such that no blood matter appears within the abdomen.
17. Hatched bed bug eggs appear hollow and may have their "hatch top" opened and attached like a pop top or missing.
18. As are the eggs, newly emerged/hatched immature bed bugs are equally small and difficult to see.
19. Newly hatched bed bugs are translucent, may appear shiny and milky white to slightly yellowish in color making them difficult to see on light color mattress, bedding materials and other such surfaces.
20. Bed bug eggs can be about the same size as one stitch of sewn mattress fabric.
21. Much like mosquitoes, bed bugs suck blood from their host victims. These blood meals are sucked in through the piercing sucking mouthparts at the "north end" and later on are expelled out the "south end" as a dark ink like appearing fecal liquid.
22. Reportedly alcohol, such as rubbing alcohol, kills bed bugs on contact.
23. At the time of this writing there are no university research proven bed bug repellent products currently available.
24. There are no effective university research proven "sonic electronic" type repelling devices to rid your dwelling of bed bugs currently available at the time of this writing. However, this doesn't prevent the consuming public from buying a surprising number of these sonic pest repelling devices each year.
25. Bed bug eggs hatch in about three to five days depending upon a number of factors, including temperature and resource availability. Again, your mileage may vary.
26. Generally speaking, bed bugs spend most of their time hiding.
27. Bed bugs prefer to hide in undisturbed areas.
28. When viewed from the side, bed bugs are built rather flat and adult bed bugs can be thinner than the thickness of a normal business card.
29. It's a "wives tale" that bed bugs "bite in a line" or "along a vein". Bed bug bites appear to be in a line because of where the bed bug or bed bugs were located at when they bit the victim such as along the area where the victim's body was laying on the bed. Bed bugs resting on the mattress, sheet or other surface where the host's body contacts that surface may then appear to have bitten in a line.
30. It seems that bed bugs do not bite where the body is covered by clothing or pajamas however, it is possible for bed bugs to crawl underneath loose fitting garments.
31. Adult bed bugs are about 1/4 of an inch long by about 3/16 inch wide, *your mileage may vary*.

32. As a snake does, bed bugs must molt or shed their skin to grow to the next stage of development (entomologists call these stages an “instar”) until they become adults. These shed skins are found in bed bug harborages and can be a tell tale sign of the presence of bed bugs.
33. Bed bugs must have a blood meal to molt or grow to the next instar or stage of development. If you find multi stages of bed bug development at our location along with the typical fecal staining present, guess what, that’s your blood !
34. Bed bugs go through five instars to become adults. This means an adult bed bug in your house may have fed upon you, your guests or your family members at least five times if they started off there as first instar immatures.
35. There are no "albino bed bugs" (nor are their albino cockroaches either). Bed bugs may appear light in color after molting and get their dark rusty red color after feeding or taking a blood meal.
36. A bed bug's abdomen (the hind end area) grows many times its original size as it takes in your blood. Just check out one of the popular bed bug feeding videos now widely available online.
37. Based on their size, bed bugs are capable of hiding nearly anywhere within a hotel room, apartment, dorm room, home or any such place.
38. Where do bed bugs come from? The short answer is mommy & daddy bed bugs. However, people get bed bugs from being at places where bed bugs are.
39. Depending upon your perspective, generally speaking bed bugs are a "people problem". They are not a “building problem”. However, if you’re the neighbor of someone who brought bed bugs into your building, your perspective may be different.
40. What do bed bug bites look like? People may react to bed bugs bites differently and the bites may appear differently on different people. Generally speaking, bed bug bites appear as raised reddened bumps on the skin that are usually itchy. There are photos of bed bug bites available for view online.
41. Can I feel the bed bugs bite me? It's doubtful that you will. Bed bugs make their living by being "stealthy". That is, they need to sneak in, find a suitable place to bite, stick in their piercing mouthparts, suck your blood and sneak away. If you could feel them do this, you'd wake up and simply squish the bed bug. Like mosquitoes, bed bugs inject an anti-coagulant and an anesthetic so you won’t feel the bite and the blood flows.
42. While bed bugs are commonly active at night, they will feed in the daytime if their host happens to be a night shift type worker or a person who maintains such hours. At the end of the day, these are tiny animals and their behavior can vary as individuals or local circumstances dictate.
43. Some people may be bitten over extended periods of time without knowing that they are being bitten. In extreme cases we’ve seen people experiencing bed bug bites for over a year without them or their medical doctors being able to identify that they in fact have bed bugs.
44. My husband isn't being bitten and thinks that "it's all in my head" and that there are no bed bugs. Is this so, am I crazy? From time to time the lady of the house asks this question and at one home the husband was really tough on his wife regarding her suspicion of bed bugs in their home. After inspecting his recliner I advised her to ask him why we were able to find six “well fed” bed bugs in his Lazy Boy and who’s blood was in them. Your husband may be being bitten but may be one of those people who just doesn't react noticeably nor suffers any itchiness from bed bug bites. Again, your mileage may vary.
45. Won't my doctor be able to tell if I have bed bug bites? Your medical doctors or dermatologist may not know about bed bugs. Medical doctors may have not been trained in medical entomology and, even at best, insect bites can be difficult to detect or diagnose accurately. We once had a woman who was an intensive care nurse who had experienced bed bugs for nearly two years before she discovered that she, in fact, had a bed bug problem. This woman had been to her general practitioner and was later referred to a dermatologist. She had received prescriptions and treatments for dry skin, psoriasis, seborrhea dermatitis, scabies and other skin related maladies over the course of those many months when her actual problem was bed bugs.
46. How bad can bed bugs get in a hotel, home or apartment? The worst I’ve seen is an apartment with a sole occupant who was a retired man in his seventies. The apartment was sparsely furnished with just a bed, table with four chairs, and an upholstered chair in front of a television set on a plastic milk crate. There had to be over ten thousand bed bugs in this apartment. I visited this apartment the day after one of my clients performed a bed bug treatment there for the follow up inspection. Dead bed bugs were mounded like drifted snow in the tracks of the

sliding glass door leading to the terrace. Mounds of dead bed bugs were in every corner of every room, along all the floor wall junctions and the walls were covered with fecal stains. The last surviving few bed bugs were found along the crown moldings. While the application work was very successful, there were still live bed bugs present and follow up treatments were scheduled. Within about 72 hours this person was moved out, the apartment was rendered bed bug free and totally renovated. Interestingly enough, when I asked this man if he had been bitten by bed bugs he replied that he wasn't and that he had never been bitten in the six months that he had lived in this apartment. It was clear that this person was suffering from mental health related conditions as well as severe bed bug problems. In a hotel I've been to locations where up to about 75% of the rooms were infested.

47. Bed bugs are tough adversaries. Just like a very good team exposes the weaknesses of their opponents, bed bugs will expose the flaws in a poorly designed or poorly implemented bed bug program.
48. Where can I find reliable information about bed bugs? There is a lot of good information available online. Generally, I recommend that folks review the information found on unbiased web sites including university based web sites, medical school websites and others. You can do a search on bed bugs and find many references to learn more about bed bugs. The more you know, the better able you are to make good decisions.
49. Bed bug fecal stains on walls and other such surfaces will "run" when sprayed with water or spray cleaners.
50. Bed bugs crawl at about the same speed as argentine ants or odorous house ants (about 1/8th inch ants commonly found trailing into homes & buildings in many areas of the US) . As mentioned previously, we found an adult bed bug is capable of traveling at from three to four feet per minute when crawling across common poster board.
51. There are many bed bug videos that can be seen online if you do a proper search.
52. Two years ago Bayer Environmental Science produced an excellent bed bug training video on DVD featuring Dr. Austin M. Frishman and Joe Barile. Check with your local distributor or Bayer representative to get a copy of this video.
53. There are many folks working behind the scenes in the pest management industry on new bed bug products and techniques, stay tuned for new tools, techniques and solutions that become available.
54. Bed bug eggs are glued in place and bed bugs can hold on surprisingly well opposite a vacuum. Based on field experience it is doubtful that a significant amount of eggs would be successfully removed via vacuuming. However, it is beneficial to use a vacuum to remove as many crawling bed bugs as possible as part of your bed bug management program.
55. It's possible, and it has been happening, for service personnel to take bed bugs home with them from work.
56. It's possible for bed bug *cross contamination* to occur where bed bugs are brought to non-infested locations by service technicians who service bed bug infested accounts.
57. Companies dealing with bed bugs on a regular basis should have policies and procedures in place that address the prevention of cross contamination.
58. Cross contamination may occur from a variety of sources including housekeeping, maintenance, deliveries and other service providers.
59. I had bed bugs on my bed, do I need to throw out my mattress and box spring? I'm often asked this question. The truth is that it is not entirely necessary to throw away your mattress simply because you had bed bugs and there are other factors that need to be considered. If your mattress is in good condition, has years of useful life remaining and has been successfully rendered bed bug free by your bed bug service provider than there is no need to discard an otherwise useful mattress. However, if you have doubts about your mattress and/or box spring still harboring bed bugs than purchase a good quality bed bug proof mattress encasement like those manufactured by Mattress Safe. High quality mattress encasements have been tested to be bed bug proof. That is bed bugs can not enter, escape or bite through these encasements. As such, even if your bed bug service provider missed a bed bug or any bed bug eggs, any such bed bugs left behind
60. Can I bring bed bugs home from work with me? Yes you can and people have done so. However, let's not panic about it. Bringing bed bugs home from work is dependent upon many factors including but not limited to: if there are actually bed bugs present at your work, what type of place you work at, the type of operation and practices utilized at your place of employment and what prevention methodologies, if any, are being utilized. If this is a concern refer to some of the prevention tips listed elsewhere below.

Bed Bug Information Of Interest to Hospitality & Housing Professionals:

61. We don't have or have never had a bed bug problem at our location. Isn't the bed bug problem just a lot of hype being promoted by the media and the pest management industry? Not at all, the incidence of bed bugs is certainly on the rise across the country and, even as an independent pest management consultant that does not advertise, I find that bed bugs take up as much as 50% of my time with an increased frequency of calls coming in.
62. It is wise to train your entire housekeeping and maintenance service staff about bed bugs such that signs of infestation can be discovered early on before a bed bug infestation can grow to a significant and broad scale problem at your hotel.
63. Hospitality locations should adopt an adequately scheduled inspection process to assist in early detection and prevention of significant bed bug infestations.
64. Bed bugs are an "equal opportunity infester". They do not discriminate between properties based upon location, type or quality as might the discerning vacation or business traveler. Due simply to their nature, logistics and other factors, every lodging location and multi-family property is subject to bed bug infestation.
65. That a guest picks up bed bugs from a hotel room may be largely dependent upon who may have stayed in that room or adjoining room prior to that guest. And, it is likely that your location getting bed bugs is largely due to a guest or resident bringing them in.
66. Bed bugs are "hitch-hikers" and dependent upon man to travel from place to place, it's possible for you to transport bed bugs to other rooms, floors or locations during your regular servicing of your hotel by maid staff, maintenance staff, bellman staff or other services.
67. Do not rely on a guest reporting bed bug problems as your sole first alert system of a bed bug problem. It is possible, and considered common by some, for people to get bitten without knowing it. As such, a bed bug problem may continue for many weeks or months before it is brought to your attention by a guest or discovered in another manner at your property. Additionally, consider that some guests may be hesitant to complain at all. A pro-active, well planned monitoring program to detect bed bug activity prior to a broad scale infestation develops is better than a non-existent program that relies on haphazard discovery of bed bugs.
68. Consider adopting the use of BDS (Bed Bug Detection System) monitor traps or other such bed bug traps to serve as a proactive bed bug monitoring so you may find bed bugs early on before a large scale and significant infestation occurs.
69. Hotel managers; keeping a bed bug suspected room "out of inventory or service" for a number of days or weeks will not "starve out" the bed bugs and solve your bed bug problem. It is not necessary for bed bugs to feed every day or every week. They can "lay in wait" for the next host for surprisingly long periods of time. In fact, under certain conditions research data indicates that bed bugs can survive up to periods of about one year without feeding.
70. Apartment managers; a reliable bed bug program that delivers acceptable results can NOT be had for just \$75 per door. Again, if it sounds too good to be true, it probably is ! Bed bug work is labor intensive and costly work to do correctly and result in a bed bug free apartment. Anyone who is doing this work and taking it seriously will attest to that.
71. As a hotel manager, how can I tell guest about bed bugs without raising a red flag or making my property seem as if it is infested? This is certainly a tricky question and one that the hospitality industry must wrestle with. Recently, I attended a presentation where a resort manager gave a presentation on how they handle bed bugs at his location. It was encouraging to hear that they had implemented a well prepared bed bug management program at his location and that they were rather candid in their communications with concerned guests opposite the bed bug problem. While we realize that this is a very "touchy" subject with a perceivably significant down side risk for the hospitality industry however, at the end of the day the truth is the truth.
72. What about bed bug lawsuits? Currently we are seeing bed bug litigations increasing along with the bed bug problem. In a published and well documented case that occurred years ago a hotel was ordered to pay a significant sum in punitive damages by the court. This huge sum was partly due to the fact that there was an ongoing bed bug problem, the property management knew it, the property management took inadequate actions to address the bed bug problem and management had the front desk staff tell guests that the bed bugs were ticks. If a property is not going to take suitable actions to adequately address a bed bug problem or attempt to hide or misrepresent their bed bug problem to the consuming public they are making poor choices and it will be more difficult to successfully defend such a situation.

73. At the time of this writing I am involved with two bed bug litigations with additional cases on the horizon.
74. It may not be necessary to simply discard mattresses and box springs indiscriminately just because of the presence of bed bugs. Mattresses and box springs in otherwise good condition may be suitably vacuumed, steam cleaned or treated for bed bugs and further protected by suitable encasements produced for this purpose. Use high quality mattress encasements or covers such as those by produced by Mattress Safe to seal bed bugs in and take away the multiple hiding places on your mattress and box spring.
75. What sort of places have you seen bed bug problems occur? The list of places that the pest management industry has been called in to handle bed bug problems is long and disconcerting. Bed bugs can be anywhere that man is and they have been so, let's leave it at that as we don't wish to cause unnecessarily alarm to anyone.
76. In hotels, why is the head board area a prime spot to find bed bugs? Bed bugs prefer to hide in undisturbed areas. In a hotel, the maid changes the sheets daily or at least regularly. As such, the mattress becomes less of a desirable hiding place for bed bugs. The head board is close by and seldom moved or disturbed. However, with bed bugs, we are dealing with live animals and once again, you're mileage may vary.

Bed Bug Inspection & Detection:

77. How can I tell I have bed bugs? Bed bugs are difficult to detect in the early stages. In my observation and experience, it's rare that a person who unknowingly brings bed bugs home from a trip will discover that she/he did so until they begin to notice that they are bitten and the problem is already established in their own home. And, this is equally so for hospitality and multi-family locations as well.
78. Based on experience, folks are more likely to notice the "tell tale signs" of bed bugs rather than see the actual live bed bugs themselves and this is especially so in the early stages of an infestation.
79. Generally speaking, more bed bugs are found toward the head of the bed than toward the foot of the bed.
80. Until you have not seen a bed bug or have not experienced bites for several weeks, some practitioners say as many as eight weeks, it may be wise to assume you still have bed bugs and act accordingly. There are however, various methodologies that may be used to assist in determining the presence or absence of bed bugs including the use of effective bed bug monitors, traps and canine scent detection.
81. How can I confirm that a room, apartment or home no longer has bed bugs? Research conducted at the University of Florida indicates that bed bug detecting canines are about 98% to 99% accurate and some clients rely on canine scent detection inspections to help determine if rooms are bed bug free. There are "high tech" electronic bed bug traps that may be utilized as well. However, you can also build an effective bed bug trap that utilizes carbon dioxide (dry ice) for under ten bucks too. Search the article "How to Build Bed Bug Trap For Under Ten Bucks" and other such articles. Such traps use dry ice/carbon dioxide to attract bed bugs. Heat based traps have also demonstrated an ability to draw bed bugs. However, we must also consider that these traps may only be attracting those bed bugs that are seeking a meal.
82. Bed bugs can not climb smooth surfaces such as clean glass or smooth plastic. Use this to your advantage and at least isolate your bed and furniture from bed bugs by using products such as the Insect Interceptor Climbug or glass jars that prevent bed bugs from being able to climb up your bed or furniture to bite you as you sleep. There are also other bed bug blocking type devices that are now commercially available. These devices place a non-climbable surface between the bed bug and the bed or furniture. The may not capture the bed bugs as the Climbug does however.
83. While live immature and adult bed bugs may be difficult to find, look for the "signs of bed bugs" including: fecal stains, eggs, shed skins and bed bug carcasses.
84. Do bed bug traps work? There are new bed bug traps being introduced to the pest management professional market and my suspicion is that such traps will soon be marketed to the general public. Those traps that emit certain bed bug attractants including heat, carbon dioxide, octanol and other materials have demonstrated high attractiveness to bed bugs. Simple trap designs, such as the Climb Up Interceptor unit by McNight, that rely on the bed bugs inability to climb smooth surfaces have also demonstrated effectiveness and are economical. Researchers have recently published data indicating that both heat and carbon dioxide may attract bed bugs in a relatively equivalent manner. And, there have been a few articles published on how to build your own bed bug traps that you can find online.
85. While a bed bug will consume many times its body weight when taking a blood meal, the majority of this added weight is expelled as liquid fecal matter. This fecal liquid creates the stains that may be found in areas where bed

bugs travel and hide. And, because much of the liquid consumed is excreted, these fecal stains may be the most prevalent sign of bed bug activity observed.

86. A simple \$1.99 magnifying glass found at an office supply, K-Mart, Target or Wal-Mart will make you a better bed bug finder. Of course, the better the lens quality the better you will be able to see so, if you can afford it, go for a higher quality glass lens unit.
87. You need a very good flashlight fitted with well charged batteries to optimize your hunt for bed bugs.
88. An LED type flashlight will serve you better than the older *normal bulb* type flashlight. LED flashlights are now widely available at reasonable prices.
89. In a home or apartment, the top hiding places for bed bugs seems to be the mattress, box spring and bed frame.
90. In a hotel room, the top hiding place seems to be the head board area. This is likely so because housekeeping changes bedding either daily or very often in hospitality locations versus at a private home. As bed bugs prefer to hide in undisturbed places this makes the head board area an ideal hiding location at hospitality locations.

Bed Bug Dogs:

91. Are bed bug dogs any good? Yes. Research conducted by the University Of Florida Department Of Entomology indicated that well trained bed bug scent detection canines are up to 98% accurate. Many experienced bed bug professionals support the use of well trained and maintained bed bug dogs.
92. How come dogs can detect bed bugs by sense of smell but humans can't? References indicate that the average dog has about 250 million receptors and that blood hounds have about 350 million. Humans have about 35 million. That's pretty much why !
93. Are bed bug detecting dogs reliable? Bed bug sniffing dogs are capable and effective at finding bed bugs and viable bed bug eggs. After learning about such dogs, my opinion is that those dogs that *are trained bed bug specific*, or only used for bed bug work, are superior to multi-pest type detection dogs.
94. What about the dog handlers? Just because you taught your dog to get the paper, sit, stay and roll over it doesn't make you a scent detection dog handler. Scent detection dog handlers are trained professionals. These handlers receive extensive training by the canine training center that they acquire their dog from.
95. Is there a scent detection dog certification program or professional association? Yes there is. Recently the University of Florida worked in cooperation with scent detection dog trainers to establish scent detection dog training certification training and an association known as NESDCA. If continuing education is good enough for medical doctors and other professionals it seems that it is reasonable for scent detection dogs and their handlers as well. Check out nesdca.com for more information.
96. I'm a pest professional that does a lot of bed bug work, should I purchase my own dog ? While that decision is totally up to you, understand that such a dog is a significant commitment. These dogs are not pets! They are additional trained employees of your company. The dog's training must be maintained and an effective dog requires a dedicated and well trained handler. Speak with a bed bug dog trainer, learn as much as you can and then make your decision. The initial cost for a bed bug trained dog can be from \$8,000 to \$15,000 however, the cost to maintain the dog, the handler and keep up with the long term training must also be considered.
97. Bed bug detection dog services may be hired to help you with certain bed bug situations and you'll likely find this more cost effective for you.
98. What breed of dog is best for bed bug scent detection? While it may be argued that the blood hound has superior ability, there are many breeds that make suitable scent detection canines. Beagles and other small to medium breed dogs seem to be one of the most popular breeds being trained for these purposes.
99. For bed bug detection why don't they use German shepherds like the police, DEA, military and other security forces do? While these large breed dogs may have the capability, there are sound reasons that smaller dogs such as beagles are preferred. Some people are scared of dogs and German shepherds can be intimidating to people. If need be a small dog may be easily lifted to check a large chest of drawers, wall hanging or other such item if need be. Try doing that with a 100 pound German shepherd. A beagle that jumps up on a couch or bed while hot on the trail of bed bugs is not as alarming or likely to cause damage as might a large breed dog. Smaller dogs are easier to transport, take up much less space and are easier overall to board.

100. What's better, dual purpose dogs or single purpose dogs? This topic has been argued by those closely involved with dog training and use. However, my preference is the use of single use dogs and this opinion is based upon practicality. If a dog alerts, we can't ask him if it's bed bugs or termites.
101. Which training center's dogs are best? I am often asked this question. Generally speaking I have not yet met a canine scent detection person who is not well versed and dedicated to their dogs and their work. I refer people to JK Canines in Tampa, FL. However, I do not know every canine scent detection training center in the country and I'm sure there are many well qualified training centers who are also doing a great job of providing well trained canines for bed bug scent detection purposes.

Bed Bug Control:

102. As a well coached team will expose the opposing team's weaknesses, bed bugs will expose the weaknesses of a poorly designed or implemented control program. Make sure your control program is well planned and well implemented by your team.
103. When dealing with bed bugs it is wise to adopt the mind set that bed bugs are like invisible microscopic germs capable of spreading infection to everyone and everywhere. Handling these accounts and the contents in a manner to prevent further infection may serve you well.
104. What's the secret to getting rid of bed bugs? There is no secret or shortcut to getting rid of bed bugs. While if caught early on a bed bug problem can be much easier to take care of, the normal experience is that once a person notices that she/he has bed bugs, the problem can be advanced such that a lot of inspection and control work is necessary to rid the property of bed bugs. The real secret is that the control work needs to be very thorough to assure that no bed bugs escape the control program and the property can be rendered "bed bug free".
105. Are there any natural ways to kill bed bugs? Well, at least to me, it's natural for man to kill bed bugs or any other pest any way possible but that's not really what you asked. Suppose you find bed bugs in your shoes or suspect that they are in your luggage. You can place these items in a large black plastic bag and place the bag out in the hot sun for a few hours. If the sun heats the contents of the bag sufficiently hot enough and long enough, you've killed the bed bugs in a natural way. Note that I said "if". The bed bugs must be heated to a high enough temperature for a long enough period of time to be killed ! This means that all the surfaces of the contents must be equally heated throughout and it takes time to get the middle of the teddy bear or other possibly infested item up to the 113 degrees you're looking for so, take your time and be sure.
106. It's not necessary to completely launder all your clothing, drapes, sheets, blankets and other garments to rid them of bed bugs. If these items are already clean, simply run them through the hot clothes dryer to kill your bed bugs.
107. Can I get rid of bed bugs myself? It's possible but it takes a lot of work, knowledge and experience expended over an extended period of time. Most folks are much better off leaving bed bug control to a competent pest professional.
108. Are bed bugs resistant to today's chemicals? Current research indicates that various degrees of resistance exists in bed bugs. However, bed bugs can be successfully killed by those products that are currently labeled for bed bugs if used and applied in a suitable fashion.
109. Within reason, the efficacy of bed bug treatments is more significantly affected by the quality and thoroughness of the bed bug control work performed rather than the products used to kill the bed bugs. In the good ole' days we used to say you have to *get the bug juice to where the bugs are* and with bed bugs it is important that the harborage sites are properly treated.
110. Plastic bags and suitable containers can be your best friends in bed bug control and avoidance. Store your clothing and other items that you are 100% sure are bed bug free within a plastic bag and tie it shut to prevent bed bugs from entering. The more things and areas you can make "off limits" to bed bugs, the better for you.
111. Bed bugs can hide in just about anything. In addition to the normal places you'd expect such as beds, mattresses, box springs, bed frames, head boards, etc.; we've also found them in places including night stands, clock radios, lamps, shoes, wall hangings, speakers, stereo components, computers, desks, artificial floral arrangements, curtains, wall outlets, moldings, door frames, crutches, artificial limbs, pet bedding, toys, plush toys/stuffed animals, clocks, potted plants, furniture, under carpets, fire alarms, telephones, just about everywhere.
112. Just because bed bugs are capable of hiding "just about anywhere" that doesn't mean that they will be "everywhere" within your location. Up until the point that the problem grows to become a "bed bug ground zero" type location it is likely that the bed bugs will be found in areas "close to the food" in your home or location which, in reality, is you or the guests !

113. Bed bugs will likely harbor (hide) in areas near where people or their victims sleep. Remember, the victim doesn't have to be a person 100% of the time.
114. Remember, a sound bed bug program needs to be thorough ! If the program sounds too simple or too good to be true, it probably is!
115. Heat can be used successfully to kill bed bugs in items that can not be laundered or treated with conventional pesticides.
116. Pest strips containing DDVP are now labeled for bed bugs. With sufficient exposure DDVP is one of the few active ingredients that provides 100% control of bed bugs, including the eggs, in the published trial data.
117. All products currently labeled for bed bugs will kill bed bugs on contact at labeled rates. Residual efficacy of such products against bed bugs varies and is dependent upon a variety of conditions.
118. Used properly, steam will kill 100% of the bed bugs and bed bug eggs contacted. A suitably built and equipped steam cleaner machine is an excellent tool that may be used for normal cleaning purposes as well as for bed bug control.
119. Continuous fill professional steamers will allow you to work longer and more efficiently than non-reservoir continuous fill type steam units. A steam unit that delivers at least 65 psi and generates steam of at least 300 degrees Fahrenheit is a good choice.
120. Homeowner type steamers normally used for wall paper removal are poor choices for bed bug control.

Travelers, Homeowners and Apartment Resident Bed Bug Tips

121. People who travel regularly are more susceptible and likely to bring home bed bugs than people who don't. As an example, when conducting German cockroach field trials in section eight type housing recently we had hundreds of apartments that were virtually loaded with German cockroaches and not one with bed bugs. Within five miles of this location we worked at an apartment complex of nearly four hundred apartments whose residents were of international origin and nearly every cockroach infested apartment also had bed bugs.
122. If necessary, bed bugs can feed on your pets so don't forget your pet's bedding if you need to do bed bug work in your home.
123. Generally, folks who unknowingly bring bed bugs home do not discover that they have a problem for anywhere from weeks to months.
124. Based upon my experience, most homeowner folks who have a bed bug problem have one thing in common, they have traveled and brought bed bugs home with them from a business or vacation trip.
125. I travel for my job, what can I do to prevent picking up bed bugs ? Wow, this is a tough question but you can do what I do. When I check in at a hotel, I enter my room just far enough to be able to close the door behind me. Using my LED flashlight, I then inspect the area around and behind the head board, the mattress and box spring for signs of bed bugs. There are a number of small decent LED flashlights available for about \$10 at many retail locations. Luckily thus far, I have yet to encounter bed bugs in any hotel room where I have stayed.
126. Any other bed bug prevention tips? Yes, bring large plastic bags with you. I prefer the large white, draw string type plastic trash bags. These bags may be used in two ways; you can put your luggage and other stuff into these bags to prevent bed bugs from entering and, if you think you encountered bed bugs, you can keep the bed bugs trapped within the plastic bags until you have the time to kill them within the bags and keep them from getting into your home. I also know a colleague that places pest strips in his plastic bags as well.
127. There are commercially available bed bug proof luggage encasements that may be used to seal out bed bugs from entering your luggage. Mattress Safe makes a product called Luggage Safe that come in various sizes to protect luggage from bed bugs and there are others that manufacture and market luggage encasements.
128. If you as a pest professional are going to visit and work at bed bug "ground zero" locations all the time, have you ever brought bed bugs home with you? Well, so far I've been lucky but I do take many necessary steps to make sure I don't bring bed bugs home. These steps include; I generally dress in all white and look like an ice cream man when visiting bed bug locations so that I increase the chance that I will see bed bugs if they are on me, I'm very careful to not touch or lean on anything in a bed bug location, I keep a Nuvan Pro Strip pest strip within my

tool cases “just in case”, I place my luggage in plastic bags with a pest strip “just in case”, I keep a change of clothes on hand so that I can change clothes completely immediately after working at bed bug locations and, I place all clothing items in a suitably sealed plastic bag. And, when I arrive home I stand in one large plastic bag, change clothes and put the used clothing into another plastic bag, these clothes are then immediately put into the laundry. Shoes, belts and other non-laundry-able items are placed in a plastic bag with a pest strip and heated under the bed bug killing sun.

129. What if I only stay at the better brand name hotels, will I avoid bed bugs? As stated previously, bed bugs are a people problem and not a building problem and are an “equal opportunity infester”. I’ve worked at numerous locations and have encountered bed bugs in five star locations as well as lower end locations.
130. How can I avoid moving into an apartment location that has bed bugs? There are web sites that list bed bug problem locations however, after checking on these web sites, I have found that they do not verify the information presented, may not update the information on a timely basis and, as such, the information presented may not be reliable. As stated previously, bed bugs are a people problem and not a building problem. If you have concerns ask the lease/rental agent or apartment manager about bed bugs, what they know about them and what their experience has been regarding bed bugs. A reputable apartment company will be truthful with you and have a sound bed bug management program and policies in place.
131. How will I know if I’m staying in a bed bug free hotel? The short answer is you won’t. You can ask but my experience at the time of this writing is that the experience of the hospitality and property management industries opposite the bed bug problem is varied. Generally, my experience has been that they will tell you an answer that indicates that they’ve never had a bed bug situation at their location. Over the past few years I’ve asked questions at locations upon check in and have yet to have a front desk person tell me that they have experienced bed bugs at their location. If you do have a concern or suspicion it may be wise to go ahead and ask your question and be mindful of how your question is answered.
132. Can’t I find out if a hotel or other property has bed bugs or not by looking on one of those online bed bug websites? No, not necessarily. Check out the various parameters for submission, parameters and rules of these websites. The content of such websites is authored by the general public and not subject to verification. As such, the information posted may or may not be entirely true.
133. Can I get bed bugs from my neighbor? Yes, you can. Hungry bed bugs seek out their hosts. They are attracted to heat, carbon dioxide and other factors given off by their victims. It’s possible that bed bugs can find their way from room to room and apartment to apartment through many available pathways.
134. Is bed bug work expensive? Expensive is a relative and subjective term. Bed bug work must be thorough and comprehensive. Currently, there are pest management professional companies doing “state of the art” efficacious bed bug work at fees as high as about \$500 per room. At the end of the day, if you have a bed bug problem, you want to hire a professional company that does professional work and stands behind their work.
135. How do I know if I am hiring the right pest management company to get rid of my bed bugs? There are about twenty thousand pest management companies in the United States but few who actually specialize in bed bug control. The bed bug problem is growing in the United States and, as a result, the pest management industry is becoming increasingly effective at handling bed bug problems with more and more companies increasing their knowledge and experience in dealing with bed bugs successfully. A good bed bug company will have a sound bed bug management program. Their program will be thorough and “make sense” to you. Their program will integrate a number of methodologies and techniques. Their program will include adequate follow up. They will stand behind their work. They will send at least two technicians to do the work. They will provide you with information on how to prepare for the bed bug management work. They will provide you with sound bed bug information and provide you with viable recommendations on what you can do to enhance the overall results of your bed bug management program. They will answer your questions truthfully and, if necessary, find the answers to your questions. They will tell you what they are going to do and they will actually do what they said they would do. When you call them you will have no trouble contacting a supervisor or manager to discuss your questions or concerns. Their service contract will be equivalent to and include the services that the sales inspector described to you during the sales process.
136. Don’t all advertisements have to contain true information? So, if a pest management company advertises that they are bed bug experts doesn’t it mean that they are? Truthful statements and marketing claims found in advertisements can be two different things and worlds apart. Don’t allow yourself to be misled simply by marketing claims. Educate yourself about bed bugs and check the references of prospective pest management providers before you contract with a selected provider. It’s likely that you’ll be glad you did.
137. Should I spray myself to prevent bed bugs at my home or property location? The decision to apply pesticide products in your own home is solely up to you. Generally speaking, homeowners are free from the regulations that

pest management professionals must comply with when applying pesticides. However, in some states there may be regulations governing the application of pesticides by property managers of apartments or hospitality properties. It may be necessary for property staff, such as maintenance staff, to take a test to become certified to apply pesticides in such properties and there are liabilities associated with the application of pesticides to consider as well. For the most part, while we all wish to maintain a pest free environment, we also wish to limit or avoid any unnecessary exposure to pesticides and related liabilities within our homes, properties and the environment if possible. Let's be very careful when considering pesticide use and application and take care to implement some of the non-chemical dependent preventative measures to avoid pest problems in the first place. Being careful and using the preventative techniques mentioned elsewhere in this article is likely a wiser way to go than spraying pesticides either unnecessarily or by inexperienced individuals.

138. My house has been treated for bed bugs, what should I do now? Be careful to utilize all the preventative techniques and follow the directions provided to you by your pest management professional.
139. My apartment company has a pest control provider, should I hire my own to take care of my apartment? Generally speaking, you are able to hire a pest professional to take care of pest situations within your own apartment at your own expense and, because you hired them yourself, they work directly for you and may provide you with superior service. However, contact your landlord company and ask questions about the bed bug services being provided by their pest professional before you make a decision on what's best for you. Recently, some municipalities have been enacting new laws related to bed bugs and the responsibilities of landlords regarding bed bugs. Check out the bed bug regulations in your location.
140. The neighboring apartment has a bed bug problem, what should I do? If you suspect that the neighboring apartment has a bed bug problem this does not necessarily mean that your apartment will get bed bugs. However, it is possible that bed bugs can travel from apartment to apartment by various means so you are wise to be concerned. Contact the apartment company/landlord to express your concerns, find out what they are doing about the bed bug situation, find out what they are doing to assure that they prevent a problem from getting into your apartment and maintain a level of increased vigilance opposite bed bugs. If after doing this you have continued questions and concerns, be persistent and make decisions in your best interest to avoid bed bugs.
141. Can't I simply wrap my mattress and box spring in plastic rather than by an expensive mattress encasement? Yes you can but if you have ever slept on plastic you probably found it very uncomfortable. In the field I have seen folks take desperate measures opposite their bed bug problems. I've seen them wrap their beds in plastic and shower curtains but these plastic covers usually rip and we need to make sure that we have 100% coverage. The Mattress Safe and Protect-A-Bed covers are well built, tested bed bug proof, dependable, comfortable to sleep on and widely available.

Closing Comments:

142. The current bed bug resurgence has given birth to a boon of new products targeting the bed bug opportunity. Scores of products are available online and at retail shops. Of concern is the efficacy of some products being marketed as the ultimate answer to your bed bug problems. Just because a product or formulation is considered exempt does not also mean that the product is exempt from working or being efficacious against bed bugs. Remember, we exist in a free market business environment where buyer beware continues to be an important consideration.
143. Hey, that's a lot of bed bug information. It seems like you know all there is to know about bed bugs? Whoa, hold on there. Field experience has well taught me that none of us know "all there is to know" about most things, especially bed bugs. Each day presents additional opportunities for all of us to learn more about bed bugs, new stuff is being discovered and developed every day.
144. Be on the constant search for increasing your knowledge and experience opposite bed bugs and the successful management of bed bugs. The pest management industry provides an important service to the public. No one deserves to suffer the inconvenience, agony and deleterious affects of life with bed bugs !

Best regards,

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