To the Editor:
This is an article form a series of monthly columns by Environmental Law Specialist Dianne Saxe, one of the top 25 environmental lawyers in the world, and Ms. Jackie Campbell. These articles are available for publishing at no charge, provided Dr. Saxe and Ms. Campbell are cited as the authors. Dr. Saxe can be contacted at (416) 962-5882 or admin@envirolaw.com. For more information, visit http://envirolaw.com.

News Article

…..Don't let the bedbugs bite

Over the past decade, North America and western Europe have seen an alarming resurgence of bedbugs in homes, university dormitories, apartments and hotels. Although the reason for the proliferation of bedbugs is not clear, some attribute this to the increase in international travel, use of narrower spectrum insecticides targetting other insect pests (that don't work on bedbugs) and resistance of these parasites to pesticides.

Bedbug backgrounder

Bedbugs are bloodsucking insects that attack humans and other mammals at night. They live in floor and wall crevices, cracks in ceilings, bedding and upholstered furniture and even inside light fixtures, remote controls, alarm clocks and other electronics.

Although wingless, bedbugs – which are small and flat, the size of an apple seed - can crawl up to 20 feet seeking a human host; they feed once a week for 10-20 minutes, then return to their lairs. Bite marks may not develop until two weeks later. Unfortunately bedbugs can live for several weeks to around a year and a half without a meal.

Do they harm us?

Although they bite and may cause rashes, bedbugs do not appear to transmit bloodborne diseases like hepatitis B or C or HIV. However, they can provoke allergic reactions, cause secondary infections (e.g., following scratching) and anxiety. Most people do not need medications to treat bedbug bites, but in more severe cases, corticosteroid creams and oral antihistamines may be used.

However, more research is needed to determine if bedbugs can transmit disease. One small study suggests that bedbugs may carry, and transmit, bacteria that are resistant to conventional antibiotics. In Vancouver's Downtown Eastside (VDE), which has high rates of homelessness, HIV/AIDS and injectable drug use, over 30% of residents reported bedbugs. Some of these bedbugs contained bacteria resistant to the "last resort" antibiotics, such as vancomycin. A 2011 literature review examined the possible role of bedbugs in transmitting pathogens.

What can we do?

To detect an infestation:

- Inspect all bed linens, the mattress (including along piping and handles, under pillow tops and in air holes), the box spring and headboard.
- Look for bedbugs. Black/brown spots might be dried blood or droppings; white dots may be eggs. Correct identification is critical to ensure that the treatment is appropriate.
- Check baseboard gaps or behind tears in wallpaper or flaking paint. If you find bedbugs on walls, they may also be in picture frames, smoke detectors and other items mounted on the wall.

The easiest prevention steps are:

- Bring into your house only new mattresses and stuffed furniture. As new mattresses may be delivered in a truck that takes away old mattresses, ensure that your new mattress is well-sealed.
- Encase all mattresses in bedbug-proof encasements.
- Use bedbug interceptors to find and trap the insects. These look like two shallow nested plastic bowls and slip under each leg of a bed. Bedbugs found in the inner bowl come from the bed; if in the outer bowl, from another area in the room.

If you've got bedbugs, call a licensed pest control company. Depending on the situation, the company may recommend physical (non-chemical) strategies to eliminate the insects, and/or to treat the area with chemicals and/or pesticides. Physical means include heating, freezing, steam cleaning followed by vacuuming, and washing/drying items at high temperatures. Note that temperatures that are not high (or low) enough, or for too little time, will result in treatment failure….and more bedbugs. In some cases, bedbug detecting dogs may be used to locate the pests.

Homeowners can save money by doing some of the work, including:

- Declutter
- Steam clean and/or vacuum the area; clean it thoroughly. If possible, use a vacuum that has a HEPA (high efficient particulate air) filter, so that insect parts and droppings (and dust) don't get recirculated back into the air. Also, as vacuums may become infested with bedbugs, avoid using hand-held ones, those with cloth bags or fabric hoses. Discard the vacuum bag in a tightly sealed garbage bag.
- Wash and dry bedding and clothing at the highest temperatures the materials tolerate.

- Heating or freezing infested items may be an option. Do your research, as different resources recommend different maximum/minimum temperatures and duration of exposure.
- Seal cracks and crevices in walls, ceilings, window and door frames, and openings like areas where pipes and wires enter your home.
- Wrap any furniture or infested items that won't be treated tightly in plastic and seal – then put them in the trash, perhaps with a sign that they contain bedbugs.

Pesticides

It is usually necessary to treat an infestation with pesticides. In order to be sold and used in Canada, pesticides must be registered under the federal *Pest Control Products Act* and classified under provincial or territorial laws (e.g., Ontario's *Pesticides Act* and Ontario Regulation 63/09). Pesticides that are used for bedbug infestations typically act as nerve poisons and may be applied in liquid, aerosol, dust or foam formulations. There are also lower-risk agents that act by drying out (e.g., diatomaceous earth) or suffocating the insects (e.g., silica aerogel). Many pesticides are restricted for use by licensed exterminators, although several may be used by the general public. A list of pesticides classified for use in Ontario is available at the Pesticide Product Information System.

As bedbugs may be resistant to pesticides that are registered to treat them, it is critical to select the appropriate pesticide and use it correctly – or risk promoting further resistance. Consumers sometimes misuse pesticides, e.g., by using those licensed only for outdoor use in their homes or by applying pesticides at higher than recommended rates, risking unnecessary exposure of family members and pets. The US Centers for Disease Control reported that 111 illnesses were associated with use of insecticides (pyrethroids and/or pyrethrins in 89% of cases) to control bedbug infestations from 2003 to 2010. Most illnesses were minor, but one vulnerable individual died after putting pesticides on her skin, open sores and hair. Use of homemade pesticides is not legal, and these agents have not been evaluated for effectiveness; their use may expose people and pets to health and environmental risks.

The ideal pesticide would be non-toxic to humans and non-target organisms. One new product of note is liquid carbon dioxide (Cryonite), which was registered in Canada in 2011 for control of bedbugs and other pests. This system releases liquid CO_2 as dry ice particles, freezing the bugs and killing them on contact. It can be used on building structures, furniture (including mattresses– conventional pesticides should not be sprayed on top of mattresses), and electrical equipment, where conventional pesticides cannot be used.

What will the pest management company do for you?

If you hire a pest management company, determine in advance what they will do – i.e., steam treatment versus pesticide use and how many treatments will likely be needed. Get details – e.g., the company should employ licensed exterminators, have experience in managing bedbugs, follow a treatment plan (which includes how you should prepare the

area for treatment) and tell you what results it guarantees. Complete eradication may not be guaranteed, as reinfestation from a new source is always possible. The company should also tell you when it is safe to enter a room that has been treated as well as any precautions to take where there are small children or pregnant women at home.

Some organizations provide details on expected services from professionals, e.g., the Ontario Non-Profit Housing Association.

What if treatment fails?

Sometimes treatments don't work. Reasons for failure include that not all the bedbugs were located, the area wasn't cleaned sufficiently, cracks/crevices were not sealed, nearby areas the bugs may have colonized were not treated (e.g., other rooms, the next apartment), or pesticides were not used properly or the bedbugs were resistant to them.

Who's responsible?

For those who rent apartments or other lodgings, landlords may be responsible for paying for the costs of treatments to get rid of bedbugs. However, this may vary with jurisdiction and, in view of the high cost of treatment(s), landlord-tenant disputes may arise. Tenants are responsible for the work involved in treating and preventing bedbug infestations, like clearing shelves, washing clothes and bedding, checking furniture and getting rid of clutter.

Ontario's *Residential Tenancies Act* requires landlords to ensure that rental units and common areas are kept in good repair, comply with health and safety standards and the buildings must be fit for habitation. The landlord is responsible for costs of building maintenance. Municipalities typically have by-laws that require all dwellings to be kept free of pest infestations (e.g., Hamilton, Ontario).

In some cases where vulnerable persons who may not be able to prepare their homes for treatment, the Public Health department of their municipality may provide assistance. Programs like the Toronto Bed Bug Project and Bug and Scrub may be available.

Some types of residential facilities may be required by law to have pest control programs and use the services of a licensed exterminator. For example, this is a requirement in licensed long-term care homes in Ontario.

In some provinces (e.g., Saskatchewan and Ontario), elected officials introduced private members bills that would have amended residential tenancies laws to require landlords to disclose to prospective tenants whether bedbugs have been in any unit in a residential complex. These right-to-know bills were never passed.

They make travelling more complicated…

Bedbugs are notorious hitchhikers. When you travel,

- Hard, smooth-surfaced luggage without no pockets is more resistant to bedbugs.
- The bedbug registry shows hotels with recent bedbug reports.
- It is safer to pack your clothes into large, sealable plastic bags and leave them inside your luggage or hang them in the closet. Don't leave clothing on the bed, floor or in hotel drawers.
- Use luggage racks, don't put your bags on the bed or floor.
- Before you accept the room, inspect the bed: pull back the bedsheets and check the mattress, including the seams and mattress tag. Watch for bloodstains and droppings (red or brown). Check the headboard and bedside table, too.
- If you do detect bedbugs, inform hotel management and ask for another room. Repeat the inspection.
- When you get home, unpack outside, and re-inspect everything. Vacuum luggage (inside and out). Wash everything that is washable using the hottest water and dry on high heat for 1 hour; delicates can go in the freezer for 2 weeks. When weather permits, luggage can also go into a hot car in the sun over a sweltering summer weekend[1], or into a car or outdoor container in bitter winter conditions.

Final words

Bedbugs are exhausting and expensive, but they can show up anywhere – even in the fanciest hotel. Be aware of what to watch for and act quickly if you find them. For more information, here are some comprehensive resources about bedbugs, including Ontario's *An Integrated Pest Management Program for Managing Bed Bugs*. Fact sheets and videos are also available. Good luck!

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[1] Haynes KF. Sleeping with the enemy. Bed bugs are back. Can science stop them? Scientific American 2012 February;306(2):50-55