

**A Pilot Project: Modeling an Effective Process to Control Bedbugs
in the Downtown Eastside**

**Vancouver Area Network of Drug Users
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1. INTRODUCTION

Controlling bedbugs is complex and difficult. There is also a popular misconception that bedbugs can only thrive in poor sanitary conditions. However bedbugs can survive anywhere where they have a place to hide from light and a periodically present host. They have been found in five star hotels, hospital waiting rooms, university dorms, schools, movie theatres and health clubs.

Two of the main reasons for the resurgence of bedbugs are increased international travel and the powerful residual insecticides that once effectively eradicated bedbugs are no longer used. The approximately 50 year break our society has had from dealing with bedbugs also means that when they began to re-emerge no one knew how to deal with them effectively.

The sole nutrition source of bedbugs is blood and they prefer less hairy humans over pets and rodents. They can be very difficult to detect and also very resilient. An adult bedbug can live for over a year without feeding. There are documented cases of adults surviving for up to 560 days without a blood meal.

Bedbugs are quite tiny and will often hide in small cracks in floors, walls or furniture, as well as in the folds and contours of mattresses. They seem to prefer wood and wooden mattress frames. Bed frames and box springs are favorite hiding places. They have an average life span of about six to nine months and females generally lay their eggs in secluded areas, the average female laying about 200-500 in a lifetime.

The rise in bedbug infestations is a growing concern for both tenants and owners.

The main purpose of the pilot project was to improve the lives of people living in Vancouver's Downtown Eastside (DTES) by developing, testing, and evaluating a more effective and systematic process to reduce the infestation of bedbugs in the neighbourhood. Funding for the project came from the Vancouver Agreement, Vancouver Coastal Health, and the Ministry of Employment and Income Assistance. VANDU's contract to carry out the Pilot was administered by Vancouver Coastal Health. The process was guided by a Steering Committee with representatives from: City of Vancouver (Solid Waste Management, the Housing Centre, Non-Market Housing Operations and License and Inspections); the Vancouver Agreement, Vancouver Coastal Health (Health Protection); the Ministry of Employment and Income Assistance; and BC Housing. The Vancouver Area Network of Drug Users (VANDU) developed, tested and evaluated a process aimed at more effectively reducing the infestation of bedbugs in the DTES.

2. OBJECTIVES

The main overall objectives of the pilot were to develop a ‘model’ process that could be used to successfully treat two buildings (one for profit and one not for profit) and educate tenants and owners on how to reduce the risk of re-infestation and prevent the spread of bedbugs in the community.

Other key objectives included:

- ***Improving the health of tenants.*** While bedbugs are not considered to transmit disease they are considered a nuisance pest of health significance. Reactions from bedbug bites range from no reaction to itchy and/or stinging bumps, bites, welts or wheals of about 1 cm in size. There is the possibility of secondary infection and although extreme reactions are rare, those affected who are concerned are advised to see a doctor. Stress, sleeplessness and insomnia are common reactions for those affected. It is also worth noting that for those who are already often dealing with addiction, compromised immune systems, mental health issues and/or poverty, the health impacts should not be minimized. Reducing the infestation of bedbugs and educating tenants and owners about their spread can potentially improve the physical and mental health of tenants.
- ***Improving living conditions.*** A proliferation of bedbugs is being addressed by courts in Canada and the US and is not considered to be an acceptable living condition with rights and responsibilities falling to both tenants and owner/landlords. With a coordinated and systematic treatment approach, general living conditions can be improved. This includes disposing of infested beds and other furniture, cleaning of clothing and bedding, removal of garbage, replacing infested beds, identifying other pest infestations and working collaboratively with professional pesticide companies. There appear to be no effective “over the counter” remedies for dealing effectively with a bedbug infestation although “over the counter remedies” can be preventative.
- ***Engaging resident participation.*** Through the use of a peer-to-peer model, it was hoped tenants would be better supported through the process and would become better educated about controlling the spread of bedbugs.
- ***Developing cooperative working processes and building community capacity.*** The pilot provided the opportunity for capacity building through partnerships with the non-profit sector, as well as building bridges among government, non-profit organizations, private and not-for-profit SRO owners/operators, residents, local businesses and others to more effectively deal with the increasingly serious bedbug problem.

- ***Providing low-threshold training and employment opportunities.*** The peer-to-peer model provided training and employment opportunities for local residents.
- ***Increasing awareness.*** Tenant information sessions and public education workshops increased community awareness to help prevent the spread of bedbugs.

This document provides an evaluation of the pilot project, as well as some key lessons learned and recommendations on how to address current rates of infestation and prevent the further spread of bedbugs in the community.

3. HOTEL SELECTION

VANDU was asked to recommend a list of 6 hotels (both for profit and non-profit) to the Steering Committee so that two could be selected for the pilot. One of the key challenges in getting the pilot project off the ground was getting buy in from hotel owners. Many owners/managers had difficulty acknowledging that they had a bedbug problem (even though tenants reported problems). Or if owners/managers did acknowledge the problem, many stated that they were dealing with the issue (typically on a room-by-room basis which research has shown to be ineffective). More will be said about this later in this report, but basically ineffective treatments are also thought to be contributing to the bedbug problem through the link to the development of bedbug resistance. When all rooms are not sprayed in a bedbug infested building, those bedbugs that disperse and survive exposure to pesticides in sprayed areas may end up being more resistant to subsequent treatments.

The Portland Hotel Society agreed to participate in the pilot and with encouragement from the City of Vancouver and Vancouver Coastal Health, the owner of the Walton also agreed to participate. Regal Place is located at 146 East Hastings Street and the Walton Hotel is located at 261 East Hastings Street. The following provides an overview of the key dates and activities of the pilot.

(i) Regal Place

- June 12, 2006 - Tenant information meeting (overview of pilot and what was to come)
- June 17, 2006 - Initial Inspection of rooms begin - 1st tenant surveys
- June 23, 2006 - Additional tenant information meeting (second meeting was held to ensure everyone aware of pilot and upcoming activities)
- June 26-27, 2006 - Initial spraying

- July 15, 2006 - Re-inspection of rooms - 2nd tenant surveys
- July 18-19, 2006 - Re-spraying
- Sept 7 & 14, 2006 - 3rd follow up - 3rd tenant surveys

(ii) Walton Hotel

- August 5, 2006 - Tenant information meeting
- August 7, 2006 - Initial inspection of rooms begins - 1st tenant surveys
- August 9-10, 2006 - Initial Spraying
- August 19, 2006 - Re-inspection of rooms - 2nd tenant surveys
- August 21-22, 2006 - Re-Spraying
- Sept 19, 2006 - 3rd follow up - 3rd tenant surveys

4. PILOT PROJECT PLANNING, COORDINATION AND COLLABORATION

As noted, overall management of the project was carried out by VANDU. The Project Manager oversaw the process. A Project Supervisor was hired to work with VANDU to ensure the process was carried out effectively, as well as to assist with evaluation, report writing and the public workshops. One of the tenant assistants became the Volunteer Coordinator, who was mainly responsible for assisting the Project Supervisor and organizing the tenant assistant crews.

Tenant engagement was initially unpredictable and seemed to alternate between fear and acceptance, especially at the Regal Place where the posters put up in hallways calling the tenants to meet with the project team to plan the treatment were pulled down. See Appendix A for an example of a Survey Notice. We proceeded with the meeting anyway and followed up with room inspections, using the room-to-room opportunity to break the ice and gain support. We met a second time with tenants and proceeded with as complete a building treatment as possible.

The tenants in the Regal are renting bachelor apartments which generally means the building management treat them differently from those living in the Walton, a more typical SRO where no rooms have bathrooms or kitchens. The tenants asked very pertinent questions during tenant meetings which helped the crew prepare for their specific individual needs.

In terms of tenant engagement at the Walton it was very necessary for many of these tenants to have assistance from the VANDU crew. Acceptance of assistance and the protocol of conducting an entire building spray was generally high at this location.

When the follow up interviews were completed after spraying and re-spraying at both locations, tenants in both locations generally reported that they had learned a great deal about bedbugs and the process necessary to deal with the eradication and control of bedbugs. More qualitative and quantitative information about this will appear later in this report.

As noted above, the initial contact with for profit SRO's was difficult and roughly 10 hotels declined our service, with most saying they did not have bedbugs. A stick and carrot approach was used with the Walton and when the people who worked as tenant assistants went back to their infested hotels the value of the process was spread by peer-based word of mouth. Since completing the pilot, VANDU has received a number of calls from private owners requesting our services and who would have been willing to participate in the pilot. Many not for profit buildings currently spray about five suites per month on a rotating basis and still have problems that tenants are not ready when the pest control company knocks on the door with the manager to spray.

As mentioned previously, the literature on bedbug control and eradication also suggests that these more incomplete sprays are less than effective and very likely contribute to the increased resistance bedbugs are developing with the unfortunate result that it is increasingly difficult to control them. As a result of working with various stakeholders the situation is now at the point now where there has been enough word of mouth and education amongst tenants and owners to support entire building sprays, which is what the literature and our observations and experience with this pilot supports. This is a good example of how and why the public education aspect is also important.

It should also be noted that the VANDU tenant assistant crew became very effective and efficient at providing peer-to-peer and community support. The tenant assistants were patient as the logistics of mattress replacement, room cleaning, and laundry collection and delivery were developed. More will be said about how the VANDU tenant assistant crew worked with tenants later in this report.

5. PUBLIC INFORMATION PROCESSES

Pilot Project Buildings

(i) Number of tenants surveyed and brief description of surveys

There were 95 tenants surveyed in total, 41 from the Regal Hotel and 54 from the Walton Hotel. Tenants were formally surveyed three times throughout the process. See Appendix B for First Tenant Survey, Appendix C for Second Tenant Survey, and Appendix D for Third Follow Up Tenant Survey.

The first formal tenant surveys gathered the following types of information:

- whether they had bedbugs;
- how much laundry they had;
- whether their bed needed to be replaced;
- whether they were able to do what was required to get their room ready for spraying;
- whether they had somewhere to go during the time they would need to be out of their room;
- whether they had pets that needed to be accommodated;
- whether they had any medical issues that might require special accommodation; and
- whether they had other pest problems.

The second formal tenant surveys were done 2-3 weeks after the initial spraying to assess the situation in terms of the following:

- whether their room had been sprayed;
- whether their mattress had been replaced;
- whether they received vinyl mattress covers for beds that weren't already plasticized;
- whether they had bedbugs or other pests now;
- how much laundry would need to be done on re-spraying;
- whether they needed help preparing their rooms;
- whether they had somewhere to go during spraying;
- whether they had pets that needed to be accommodated;
- whether they had any medical issues that might require special accommodation; and
- whether they had other pest problems.

The third formal tenant surveys were done approximately one to two months after re-spraying. We used the third follow up as an opportunity to educate tenants further about bedbugs and how to prevent re-infection, as well as gathering the following types of information:

- the extent of the problem with bedbugs or other pests before spraying and currently;
- whether tenants were able to determine if they had bedbugs;
- whether tenants needed more information on bedbugs or what to do if they had them;
- whether it helped to have volunteer tenant assistants from VANDU available throughout the process;
- whether tenants had concerns about re-infection based on what people were bringing into the hotel;
- what tenants thought could be done to prevent re-infection;
- if tenants generally knew how to avoid re-infection;

- whether tenants could now help someone prepare a room for spraying;
- what was best about the process for tenants;
- whether tenants had any suggestions for improving the process; and
- whether tenants needed any follow up.

(ii) Number of information sessions and brief description

There were three general tenant information sessions held in total, two at the Regal and one at the Walton. Each information session was approximately one hour, and tenants were provided with background information on bedbugs generally, the Bedbug Pilot Project, and the role of VANDU in providing tenant assistance. This information was provided verbally and in the form of five brochures. Brochures were also distributed leading up to and during room surveys.

The following is a brief description of the five brochures distributed:

- (1) An Overview of the Pilot Project - provided background on the bedbug problem, purpose of the Bedbug Pilot Project, and a brief description of how VANDU tenant assistants would assist - see Appendix E for Overview of Pilot Project Brochure;
- (2) An Overview of the Role of the VANDU Volunteer Tenant Assistant - provided some detail in terms of how tenant assistants could help with room preparation for bedbug spraying - see Appendix F for Overview of Role of VANDU Volunteer Tenant Assistant Brochure;
- (3) Information on what to expect when a room is treated with pesticides - provided information such as how long to remain out of your room after bedbug spraying, what to do when you return etc - see Appendix G for What to Expect When Your Room is Treated Brochure;
- (4) Vancouver Coastal Health “Guide to Bed Bug Control” brochure - provided general information on detecting and controlling bedbugs; and
- (5) Canadian Pest Control Ltd. “Bedbugs: What You Need to Know” brochure - provided general information on detecting and controlling bedbugs.

(iii) Number of participants in attendance at the information sessions

There were 51 tenants in attendance at the information sessions in total, 33 from the Regal and 18 from the Walton.

(iv) Number of flyers distributed

Approximately 475 flyers were distributed during the pre-treatment tenant surveys and information sessions, in the form of five types of flyers to approximately 95 tenants.

Workshops

To date, two bedbug public information sessions and one large public workshop have been held.

(i) First public information session

The first public information session was held at the DTES Women's Center in August and was attended by 8 women. It was informal and mainly covered the following: how to tell if you have bedbugs, stressing the importance of detecting them early; and how to get treatment with a focus on the "rights" of a tenant to get treatment ordered by the landlord. It is not legal to "treat" a unit in a multiple unit building without permission of the building manager or owner and the pesticides used for bedbug eradication cannot be bought or handled by anyone unless they have a certificate. Participants were shown fecal spotting and bedbug samples, including eggs and each juvenile and adult stage.

(ii) Second public information session

The second public information session took place at a monthly meeting held by Neighbourhood Helpers. Their volunteers go into the larger hotels weekly to provide coffee and facilitate discussion groups. We sent a representative to one of their monthly meetings to show a Vancouver Coastal Health PowerPoint presentation on bedbugs.

(iii) First public workshop

The first large public workshop took place at First United Church on November 15, 2006. It was focused on tenants. There were approximately 65 people in attendance. The Project Supervisor and Volunteer Coordinator prepared and presented a PowerPoint presentation covering such topics as: dispelling misconceptions about bedbugs; an overview of the Bedbug Pilot Project; general facts about bedbugs; detection of bedbugs; effects of bedbug infestation; what to do as tenants and as landlord/owners if you have bedbugs; how necessary professional spraying is; what to expect with spraying; how trained tenant assistants can help with the process; and preventative measures and things to do until the spray happens.

At this large public workshop we also had samples of fecal spotting (the spots of digested blood that are a sign of bedbugs), samples of the five juvenile stages of bedbugs, a sample of an adult male and female bedbug, as well as some “over the counter remedies” that generally do not work in a true bedbug infestation. We also had attendees evaluate the workshop and provided a small stipend. For this large public workshop we also prepared four informational brochures.

The following is a description of the four brochures we distributed at the first public workshop:

An Overview of the VANDU Bedbug Pilot Project - provided information on VANDU, the pilot project, the main services provided by tenant assistants, and some highlights of what we learned - see Appendix H for an example of An Overview of the VANDU Bedbug Pilot Project Brochure.

General Facts About Bedbugs - provided information on the habits of bedbugs, identification tips, tell-tale signs of infestation, and some frequently asked questions and answers - see Appendix I for an example of General Facts About Bedbugs Brochure.

Information on the Elimination and Control of Bedbugs - provided brief information on control, prevention, inspection, sanitation, trapping, and some frequently asked questions and answers - see Appendix J for an example of Information on the Elimination and Control of Bedbugs Brochure.

More Information on Bedbug Prevention - provided brief descriptions of the main aspects of prevention of re-infestation - see Appendix K for an example of More Information on Bedbug Prevention Brochure.

Overall the evaluations for this public workshop indicated high ratings on the usefulness of the information and the ability of the presentation to keep the attention of the audience. The three lessons learned from this first large public workshop were the importance of a functioning sound system; the need for adequate staffing to assist people with completing the evaluations; and, the importance of providing stipends. However, overall the workshops were a success. See Appendix L for an example of a Public Workshop Evaluation.

(iv) Second Public Workshop

The second large public workshop took place at the Carnegie on December 2, 2006. The second workshop was targeted more towards landlords/owners (however, DTES non-profits, service providers, tenants and members of the general public were also welcome). There were approximately 50 people in

attendance. Again, the Project Supervisor and Volunteer Coordinator presented a presentation covering such topics as: dispelling misconceptions about bedbugs; an overview of the Bedbug Pilot Project; general facts about bedbugs; detection of bedbugs; effects of bedbug infestation; what to do as tenants and as landlord/owners if you have bedbugs; how necessary professional spraying is; what to expect with spraying; how trained tenant assistants can help with the process; and preventative measures and things to do until the spray happens.

Samples of fecal spotting (the spots of digested blood that are a sign of bedbugs), as well as samples of the five juvenile stages of bedbugs, and adult male and female bedbug, and “over the counter remedies” that generally do not work in a true bedbug infestation were provided. Attendees also evaluated the workshops which were overall very positive.

The evaluations indicated overall high ratings on the usefulness of the information and the ability of the presentation to keep the attention of the audience. Some of the suggestions from workshop attendees included the following:

- more public workshops so that people in the area could become more educated on this important issue;
- smaller workshops as well as larger ones;
- having a pesticide professional present;
- making the PowerPoint and speakers notes more widely available;
- requesting that non-profits in attendance give presentations on their experience;
- and having a panel presentation.

Logistically the event was also successful - the sound system functioned and there were adequate staff in attendance.

The four informational brochures referred to in the section above have been attached as Appendices H, I, J and K. The Public Workshop Evaluation for the workshop was again the same as set out in the above section and attached as Appendix L.

(v) Number of flyers distributed

Approximately 250 flyers were distributed in the two large public education workshops held at First United Church and the Carnegie. Roughly 115 people were in attendance at both workshops and the four information brochures referred to above were made available at both workshops.

One further workshop will be held February 22, 2007 at the new VANDU office. This final public workshop will target owners/landlords and non-profits, as well as other community organizations and residents.

6. PRIMARY AND SECONDARY ROOM TREATMENT

For both hotels an initial spray was done and then a re-spray was completed approximately two weeks later. The following table provides a summary of these two treatments. A third follow up was done in both hotels to determine outcomes and collect information, the results of which appear in a later section in this report.

Table 1: Summary of Primary and Secondary Room Treatment

	REGAL		WALTON	
	1 st Treatment	2 nd Treatment	1 st Treatment	2 nd Treatment
Number of Rooms in building	40	40	48	48
Number of Rooms Occupied	40	40	48	48
Number of Rooms Treated	31	9	48	48
Laundry Washed	822 pounds		1,744 pounds	
Garbage removed	2 truck loads		2 and a half truck loads	
Beds replaced	14		45	
Rooms requiring follow-up treatment	9		48	

(i) Number of rooms occupied in each building

There were 88 occupied rooms in total, 40 at the Regal and 48 at the Walton.

(ii) Number of rooms treated

There were 70 rooms treated in total, 31 at the Regal and 48 at the Walton. The cost of spraying, which was covered by the owners totaled \$3,200 for 40 units at the Regal, and roughly \$4,500 for 96 rooms at the Walton.¹

¹ The owner of the Walton also reported spending a further \$6,900 on clean up and repairs (e.g., caulking fixtures, sealing cracks in the walls, etc.) to prevent re-infestation and the further spread of bedbugs following the pilot project.

(iii) Laundry

There was approximately 2,566 pounds of laundry washed in total, 822 pounds from the Regal and 1,744 pounds from the Walton.

(iv) Garbage removal

There were four and a half truck loads of garbage removed in total, two from the Regal and two and a half from the Walton. The garbage removed consisted mostly of infested beds, as well as some bagged garbage and a small amount of other items of furniture. Each truck load could take approximately 15 infested beds, as well as some other furniture items and bags of garbage.

(v) Bed replacement

There were 59 beds replaced in total, 14 at the Regal and 45 at the Walton.

(vi) Follow up treatment

There were 57 rooms in total requiring a second spray, 9 at the Regal and 48 at the Walton.

7. PROJECT LOGISTICS***Treatment at the Regal******(i) Description of tenant assistant training process***

The initial training process for the VANDU tenant assistants (TAs) involved holding meetings to discuss and describe the type of work to be done, including coverage of any safety concerns and precautions to be taken. After recruiting the TAs and explaining the project, the TAs took a Workers Compensation Board Health and Safety workshop specifically on bedbugs. The TAs were also required to attend the first tenant information session where the representative from the Canadian Pest Control presented information on bedbugs generally, as well as the specific procedure that would be used in treating the rooms and doing the subsequent follow up.

Hotel owners were responsible for hiring the pest control companies. In order to ensure that the day of treatment went smoothly, pest control companies were asked to provide instructions on how they wanted the rooms prepared. This allowed us to train the TAs on the tasks that needed to be completed prior to the spray company treating a room. TAs were also shown how to operate a vacuum and then how to ensure the bug infested material was properly removed before cleaning and storing the machines.

On the second spray of the Regal, a representative from the Blue Shell Laundry Company came to instruct TAs on laundry protocols to ensure proper labeling of laundry bags, as well as to ensure that unwashed laundry did not get confused

with washed items. Estimating the size of a 40 lbs bag of laundry was a skill the TAs needed to acquire so that individuals with too much laundry could be told they needed to choose what to throw out and what to submit as laundry.

Overall the need for pre-shift training for the specific tasks associated with the TAs and volunteer coordinator jobs was relatively low because the tasks were familiar to people and could be learned quite easily on the job. Also the TAs became better at organizing themselves through their on site experience of working together as a team. The ability of the TAs and the volunteer coordinator to organize and work together as a team increased significantly over the course of the project.

The most noticeable outcome of the initial training sessions combined with the on the job training was the development of good teamwork skills. Unfortunately, management at the Regal did not grant us access to the suites ahead of the spray technician. As a result the skill of the TAs to enter rooms on spray day with the spray technician and work as a team to prepare a room was developed quickly. This was key to a successful spray. Another challenge requiring additional training was the handling of infested mattresses. Infested mattresses were bagged and then carried to the alley for pick up. The task made for difficult work as the mattresses are heavy and the elevator was very small and slow and would not fit a double box spring well. As a result a “safe lifting” section was added to the training session.

(ii) Number of tenant assistants trained (type of low-threshold employment and training opportunities created)

There were approximately 30 TAs trained initially. The main duties of the TAs were to clean and prepare the rooms for spraying - this involved bagging and transporting garbage for pick up, bagging and transporting laundry for pick up, bagging and transporting infested beds and furniture for pick up, vacuuming, and generally cleaning and tidying up the rooms. The TAs also interacted with the tenants providing information about the process, answering questions, and addressing concerns. The Project Manager was also working as Project Coordinator/Supervisor during the work at the Regal and one TA was assigned the role of Volunteer Coordinator (VC).

The VC was responsible for the general organization and coordination of the TAs in carrying out their duties. The VC also worked with the Project Coordinator/ Supervisor keeping tenants informed of the process by posting notices, generally assessing and preparing for the work to be done by being involved in room inspections and surveys, and assisting with the coordination of the logistical aspects such as laundry pick up and delivery, garbage pick up, and bed delivery.

(iii) Number of tenant assistants worked with

The overall number of TAs worked with at the Regal was thirty, though by the end of this part of the process there were about fifteen main TAs. Training more TAs than initially thought were needed proved an excellent strategy since not all TAs initially trained stuck with the project. In addition, a few of the TAs also proved to provide better peer-based word of mouth for the project which was very valuable. Some TAs found the work too difficult and dropped out so the others took up the slack, and it could also be a little ironic and a bit painful for TAs to clean another person's room for a spray, only to return home to their own infested room.

Some TAs were recruited from the Regal since they had attended the tenant information sessions and then volunteered in response to another TA leaving part way through spray day. Some of these TAs also then worked on the Walton. Some of the TAs became overwhelmed by the squalor they encountered in the rooms and as a result were encouraged to take care of themselves and were grateful if other TAs checked in to see if they were needed throughout the second and third day of the process.

(iv) Tenant activities

The initial proposal included a variety of activities to keep tenants busy while their rooms were being treated. Offering meals and movie passes or other kinds of organized tenant activities during spray days at the Regal was possible because the Regal provided access to a common room on the main floor of the building. However, none of the tenants were interested in movie passes and instead were given a \$10 stipend to go out for the day, as well as being invited to a snack with the TAs which created a more friendly atmosphere.

Without a common room, this same process was not possible at the Walton although a space at First United Church was secured as a place tenants could go on spray day. Feedback from First United was that no one from the Walton attended. Planning tenant activities was more complicated to deliver than initially anticipated and it was found to be irrelevant during the process for tenants who often had other things to do or had a preferred place to go. Perhaps in the case of very bad weather more tenants would have taken up the offer of a movie but the weather was generally warm and sunny.

There were four meals provided over the course of treatment at the Regal, one in the form of a light lunch at a tenant information session and three for the TAs and Regal tenants. There was also a pet minding center set up in the Regal common room. One of the pet owners set it up, took care of the pets, and was provided a volunteer stipend.

(v) Effectiveness of tenant assistants working with tenants (eg. able to resolve issues, coordinate moving them out so the treatment process went smoothly etc)

The ability of the TAs and VC to work with the tenants, including resolving issues and coordinating the movement of tenants out of the building during spraying for bedbugs, was very good by the end of the process at the Regal. Comments made by the tenants during the third follow up strongly reflected this. For example, in the words of one tenant, it was “a really good, well-organized job with lots of information provided, and the people from VANDU were very helpful and polite”. Many other comments made by tenants reinforced this overall assessment.

Many tenants commented that the help from VANDU was the best part of the process for them, noting particularly the “peer support” and “teamwork.” Others described the process as “efficient and organized”, stating also that it couldn’t have been done without the help of VANDU. The comments made about the help VANDU provided during the third follow up were overwhelmingly and quite consistently positive.

The ability of the TAs and VC to interact well with the tenants and provide strong peer-to-peer support was undoubtedly a key component in the success of the project overall. More will be said about this in the corresponding section for treatment at the Walton Hotel where the value of this was heightened due to the circumstances of this particular hotel.

Treatment at the Walton

(i) Number of tenant assistants worked with

There were 9-10 main TAs involved in treatment at the Walton. Again, the main duties of the TAs were to clean and prepare the rooms for spraying. This involved bagging and transporting garbage for pick up, bagging and transporting laundry for pick up, bagging and transporting infested beds and furniture for disposal, vacuuming, and generally cleaning and tidying up the rooms. The TAs also interacted with the tenants providing information about the process, answering questions, and addressing concerns.

One TA acted as the VC. The VC was responsible for the general organization and coordination of the TAs in carrying out their duties. A Project Coordinator/Supervisor was hired for this phase of the project and the VC was also responsible for working with the Project Coordinator/Supervisor keeping tenants informed of the process by posting notices, generally assessing and preparing for the work to be done by being involved in room inspections and

surveys, and assisting with the coordination of the logistical aspects such as laundry pick up and delivery, garbage pick up, and bed delivery.

(ii) Tenant Activities

Again, providing meals and movie passes or other kinds of organized tenant activities during the day of treatment was not workable as the process was more complicated given the scope of work that needed to be carried out in the hotel. It was also somewhat restrictive or irrelevant for the tenants who often had things to do or a preferred place to go. Tenants were given stipends for the days they had to be out of their rooms in relation to spraying.

Ten meals were provided over the course of this process, one in the form of a light lunch at a tenant information session and nine for TAs during spray days. The TAs and Project Coordinator/Supervisor met for breakfast at the beginning of each working day. This was an excellent opportunity for everyone to start the day with a good meal and to connect with each other before beginning the formal shift.

(iii) Description of tenant assistant training

Once we began working at the Walton, most of the TAs and the VC were quite familiar with the work to be done. One meeting to discuss and describe the type of work to be done was held (included an overview of safety concerns and precautions to be taken). An employee from the Laundromat attended and outlined what the Laundromat needed.

The degree of infestation at the Walton was much more severe than it had been at the Regal. Most of the literature states that bedbugs are generally quite difficult to detect, often only detected through the signs of infestation (in the form of bites or fecal spotting on mattresses and other furniture and items), and generally not expected to be seen during daylight hours. In doing the initial room inspections at the Walton Hotel, bedbugs could be seen on many of the mattresses and elsewhere throughout the hotel during daylight hours. Also the very sickly sweet smell associated with bad infestations was prevalent in many rooms in this hotel.

We notified the TAs during the initial training meeting that the level of infestation was much higher at the Walton. In terms of protecting the TAs and other staff from carrying bedbugs out of the hotel, it was ensured that while on site everyone wore the hooded polypropylene suits and latex gloves provided, taping around wrists and ankles and spraying Raid onto wrists and feet to deter bedbugs from approaching. It was also highly recommended that TAs and other staff shower upon completing the shift, as well as placing their clothes into a plastic bag until they could be laundered.

During this phase of the project there was very little need for pre-shift training for the specific tasks associated with the TA and VC jobs. The TAs and VC were

generally very good at organizing, and worked well together as a team. The strong teamwork skills were instrumental in getting the work done at this hotel which was quite challenging. Some of the challenges will be described in some detail in the section below.

(iv) Effectiveness of tenant assistants working with tenants (eg. able to resolve issues, coordinate moving them out so the treatment process went smoothly etc)

The TAs were very good at organizing and coordinating themselves to get the work done with some guidance and assistance from the VC, who was present the entire time, and the Project Coordinator/Supervisor, who was present much of the time or available by phone. The TAs and VC were able to assist tenants very effectively through issue resolution and problem-solving at this stage in the process.

Having one TA act as VC improved the process, allowing the Project Coordinator/Supervisor to focus more on overall logistics planning, paperwork, and obtaining the necessary equipment and supplies. Overall this was a challenging working situation with almost 50 rooms to be prepared for spraying and almost every bed to be replaced over the course of two and a half days. In terms of the circumstances TAs and staff encountered, they ranged from heavy infestation where the walls and curtains were covered with bugs, bugs could be found in food in the refrigerator and were also dropping from the ceiling in some areas, to rooms that were jammed full of possessions and garbage, to rooms where there was open meat left on the floor, to rooms in various levels of disrepair including a room where the sink fell off the wall during clean up. Initially the smell in some of the rooms also made it almost impossible to work in them for any length of time.

We also encountered one severely ill tenant who was lying on his mattress wearing very little clothing with numerous burns and boils over his skin, and cockroaches crawling all over him. This tenant was also quite incoherent, very unsteady on his feet, and unable to control his bladder. He urinated on one of the TAs as they were trying to help him up to prepare his room. An ambulance was called and he refused treatment when it arrived.

The next day the Project Manager spent a number of hours trying to find a way to get this tenant some medical assistance. The Project Manager was able to get him to another room and had a street nurse come to see him. He ended up getting medical attention through a clinic following the street nurse's visit. It is our understanding that he had a doctor come to see him as well. We saw this tenant up and walking around in a much better state when we went back to the Walton Hotel for the re-spray. This is an example of the difference it made to have the work done through an organization that has experience and expertise

in addressing the issues that some tenants who are living in infested hotels in the DTES face.

The TAs, VC and other staff worked effectively with all of these circumstances, as well as getting 45 infested beds and garbage out, laundry prepared for pick up, and rooms cleaned up and vacuumed. After having roughly 9 TAs working at the Walton for two days, the hotel was truly like a different place when visited for the re-spray. Quality of life for the tenants had undoubtedly improved. This resulted in the positive effect of tenants being assisted as opposed to simply being shifted from one hotel to another.

There were some problems with complaints about tenants not receiving all of their laundry back. The issue was addressed by developing a compensation process for two complaints. A tighter system of tracking laundry was also implemented. It involved the Project Coordinator/Supervisor recording how many bags left the hotel for each tenant, and going to the Laundromat to have the bags weighed for each tenant in order to verify that what was received back what was what was sent out.

Again, the ability of the TAs and VC to interact well with the tenants and provide strong peer-to-peer support was undoubtedly a key component in the success of the project overall. The comments of many of the tenants during the third follow up reinforced this as well. In terms of the overall process, tenants were very positive about the assistance the TAs, VC and staff provided. There were numerous comments such as “you get an A+ for the whole process”, “it was really well done”, “great job”, “fine job”, “very beneficial” and “you are providing a real service”. We received many expressions of gratitude from the tenants, manager and owner at this hotel.

8. RESULTS FROM THE THIRD FOLLOW UP TREATMENT

The third follow up at each hotel was done roughly two months after the first spray at each hotel. The third survey was done by going room-to-room to do more education on detection and prevention, to assess the situation in terms of what had been accomplished, and to record suggestions tenants had for dealing with re-infestation issues. The following table provides a summary of the main information we received from the third follow up survey in both hotels.

Table 2: Summary of Third Follow Up Treatment

	<i>The Regal Place</i>	<i>The Walton Hotel</i>
	3 rd Follow Up	3 rd Follow Up
Number of rooms	40	48

Number of rooms occupied	40	48
Number of rooms surveyed	30	34
Number of rooms not needing follow up	22	26
Number of rooms needing follow up	8	8
Reduction in Infestation Rate	50%	76%
Percentage of rooms VANDU helped prepare	70%	85%
Percentage of tenants who could now prepare a room	67%	79%
Most frequent response of what was best about the process	The help and support from VANDU	Got rid of the bedbugs
Most frequent response for improvement	More regular monitoring and periodic spraying	More regular monitoring and periodic spraying
Percentage of tenants who could now detect bedbugs	90%	97%
Percentage wanting more information on prevention	33%	41%
Most common prevention policy	More tenant education and awareness	Monitoring what people bring in

The Regal

(i) Units surveyed

75% or 30 out of 40 of the units at the Regal were surveyed in the third follow up.

(ii) Units not requiring follow up treatment

73% or 22 out of 30 of the units surveyed did not need follow up for bedbugs.

(iii) Units requiring follow up treatment

27% or 8 out of the 30 units surveyed do require follow up for bedbugs.

(iv) Evaluation of the reduction in rate of infestation

In terms of the two hotels, the Regal had a much lighter infestation. After the initial spraying, the Canadian Pest Control Ltd. technician stated that “Overall, of the rooms we could access, this building does not have a big bedbug problem

(relatively speaking). We found many more dead bugs and old blood spotting than we did new evidence and live bugs.”

Initial spraying covered 78% of the units (31 out of 40 units). The remaining nine units either refused to allow spraying or were not ready for spraying. This was in sharp contrast to the Walton where tenants welcomed the process.

Twenty-nine percent of those rooms initially sprayed were identified by the pesticide company as having “active bedbug problems” (9 out of 31 units). The number of rooms identified by the pest control company as having active bedbug problems was different from the number of people who reported they had bedbug problems before spraying when the third follow up at the Regal was completed. Sixty percent of tenants on the third follow up stated that they had bedbugs before spraying (18 out of 30). Comments and some evaluation of both groups will be provided below.

The fact that only 29% of the rooms initially sprayed were re-sprayed (9 out of 31 units), proved to be less than ideal. It seems very important for all rooms initially sprayed to be re-sprayed. This makes sense in light of the literature as well which suggests that the second spray is necessary to kill any eggs that were not killed with the first spray. The literature also suggests that more follow up can be needed beyond the two recommended sprays.

Of the 9 rooms originally identified as having active bedbug problems, follow up was done on 7 of the rooms. Forty-three percent reported that they were bedbug free (3 out of 7). One-hundred percent of the rooms that stayed bedbug free had been re-sprayed (3 out of 3). Fifty-seven percent of the 7 rooms that had a follow up reported they still had bedbugs (4 out of 7). Fifty percent of the rooms that reported still having bedbugs had not been re-sprayed (2 out of 4). These results emphasize the importance of re-spraying.

Of the thirty rooms that a follow up was conducted on, 60% of these tenants identified themselves as having bedbugs before spraying (18 out of 30). Fifty-six percent of tenants who identified themselves as initially having bedbugs were now reporting they were bedbug free (10 out of 18). Forty-four percent of tenants who identified themselves as initially having bedbugs stated they still had bedbugs or thought they did (8 out of 18). It is also worth noting that 38% of those who identified themselves as initially having bedbugs and stated they still had them or thought they did, also had refused treatment (3 out of 8). Again this emphasizes the importance of rooms being treated properly, which involves both spraying and re-spraying.

If the reduction in infestation rate in this hotel is somewhere in the middle of the above two groups, it appears that about 50% of tenants who had bedbugs at the outset remained bedbug free two months after spraying. This figure would likely be higher if all units had been sprayed and re-sprayed. Also it is worth

noting that there were no new bedbug infestations reported on the third follow up. So it seems that the two rounds of spraying, even though not every unit was sprayed and only 29% were re-sprayed, halted the spread of bedbugs in this building and resulted in a reduction in infestation rate of 50% two months after spraying. There is definite room for improvement in the reduction in infestation rate with more comprehensive spraying and re-spraying which would likely be easier as everyone becomes more aware and educated about how important this is.

(v) Effectiveness of TAs

Seventy percent of the tenants reported that the TAs, VC and staff had helped with room preparation for the spray (21 out of 30). Sixty-seven percent stated they could help prepare a room for spraying based on what they had learned from the process (20 out of 30).

In terms of the most frequent responses about what was best about the process for the tenants, 40% stated that the help and peer support from VANDU was best for them (12 out of 30). For example one tenant stated that it was “a really good, well-organized job with lots of information provided, and the people from VANDU were very helpful and polite”. Other tenants noted the “peer support” and “teamwork” and described the process as “efficient and organized”, stating it couldn’t have been done without VANDU.

The rest of the responses in terms of what was best about the process were as follows in descending order of response frequency:

- 27% said getting rid of the bedbugs (8 out of 30);
- 27% said the whole building being sprayed (8 out of 30);
- 13% said having all their laundry done (4 out of 30);
- 10% said the information provided throughout the process (3 out of 30),
- 10% said the clean up and garbage removal (3 out of 30); and,
- 3% said getting their bed replaced (1 out of 30).

In terms of suggestions for improvement,

- 40% said they didn’t have any (12 out of 30);
- 20% suggested more regular monitoring of the problem and periodic spraying (6 out of 30); and,
- 10% suggested improvements to the laundry system (which were implemented at the Walton) (3 out of the 30).

Some tenants at each hotel had complaints that some of their laundry had not been returned. Initially there was unfortunately no way to verify this. At the re-spraying stage at the Walton, this issue was addressed by the development of a tighter system of tracking laundry which involved the Project Coordinator/Supervisor recording how many bags left the hotel for each

tenant, and going to the Laundromat to have the bags weighed for each tenant in order to verify that what was received back was what had been sent out.

As stated previously in this report, the comments made about the help VANDU provided during the third follow up were overwhelmingly and quite consistently positive.

(vi) Effectiveness of education & re-infestation concerns

Ninety percent of the tenants surveyed could now detect bedbugs (27 out of 30). Thirty-three percent of tenants would like to have more information on prevention (10 out of 30).

In terms of re-infestation concerns, 27% had concerns about what people were bringing into the building (8 out of 30). Forty-three percent were able to discuss the basics of how to protect themselves from re-infestation (13 out of 30). Of these tenants, some stated they just didn't have visitors anymore. With some tenants, the idea of having visitors place questionable belongings into plastic bags, as well as providing visitors with a change of clothes and asking them to take a shower and put their clothes in a plastic bag was also discussed.

Fifty-five percent of those who made a suggestion for a prevention policy suggested more tenant awareness and education as being most important (10 out of 18). Forty-four percent of those who made a suggestion for a prevention policy suggested monitoring what people were bringing in (8 out of 18).

The Walton

(i) Units surveyed

71% or 34 out of 48 of the units at the Walton were surveyed in the third follow up.

(ii) Units not requiring follow up treatment

76% or 26 out of 34 of the units surveyed did not need follow up for bedbugs.

(iii) Units requiring follow up for treatment

24% or 8 out of the 34 units surveyed do require follow up for bedbugs.

(iv) Evaluation of the reduction in rate of infestation

Initial observations via room inspections, combined with the tenants' own reports, led to the conclusion that almost every room had bedbugs and that the overall infestation rate was effectively 100% at this hotel. There was also a heavy cockroach infestation in the building.

This hotel was sprayed and almost every bed was replaced (45 beds in 48 rooms). There was a follow up spray approximately two weeks later and all rooms were re-sprayed. There were also a number of rooms that were treated for cockroaches as well.

Seventy-six percent of the rooms surveyed approximately one month after treatment did not have signs of bedbugs although many still had cockroaches (26 out of 34). Twenty-four percent of the rooms surveyed had signs of bedbugs (8 out of 34). In the rooms that still had signs of infestation, it was generally much lighter than the initial infestation. The overall reduction in infestation rate at this hotel was 76%. Should the pilot be extended, it is suggested that VANDU re-evaluate the long term impact of the initial project on the rate of re-infestation.

The Walton Hotel posed a very challenging working situation with almost 50 rooms to be prepared for spraying, heavy infestation, very cluttered rooms, a tenant with unattended medical needs and almost every bed in need of replacement over the course of two and a half days. The crew worked effectively with all of these circumstances and after having roughly 9 TAs, the VC and Project Coordinator working there for two days during the first spray, this hotel was truly like a different place when it was revisited for the second spray.

(v) Effectiveness of VANDU tenant assistants

Eighty-five percent of tenants at the Walton reported that VANDU had helped with room preparation for the spray (29 out of 34). Seventy-nine percent stated they could help to prepare a room for spraying based on what they had learned from the process (27 out of 34).

In terms of the most frequent responses about what was best about the process for them, 41% of tenants stated that it got rid of the bugs (14 out of 34). In this regard we received comments such as “we slept really well” and “peace of mind” was improved.

The rest of the responses in terms of what was best about the process were as follows in descending order of response frequency:

- 24% said having all their laundry done (8 out of 34);
- 21% said VANDU and people helping each other (7 out of 34);
- 21% said the whole building being sprayed and the follow up (7 out of 34);
- 12% said clean up of the rooms and the entire building (4 out of 34);
- 12% said getting their bed replaced (4 out of 34); and,
- 9% said the information provided throughout the process (3 out of 34).

In terms of the overall process tenants were generally very positive about the help VANDU provided, for example there were numerous comments such as

“you get an A+ for the whole process”, “it was really well done”, “great job”, “fine job”, “very beneficial” and “you are providing a real service”.

In terms of suggestions for improvement, tenants made the following comments:

- 56% said they didn’t have any (19 out of 34);
- 26% suggested more regular monitoring of the problem and periodic spraying (9 out of 34);
- 6% suggested improvements to the laundry system (implemented for the re-spray) (2 out of the 34); and,
- 6% suggested more treatment for cockroaches (2 out of the 34).

(vi) Effectiveness of education & re-infestation concerns

Ninety-seven percent of tenants at the Walton were now able to detect bedbugs (33 out of 34). Forty-one percent of tenants would like to have more information on prevention (14 out of 34).

In terms of re- infestation concerns, 32% had concerns about what people were bringing into the building (11 out of 34). The manager and several of the tenants reported that the front desk was monitoring what people were bringing into the building. Sixty-seven percent of those who made a suggestion for a prevention policy suggested monitoring what people were bringing in (12 out of 18).

9. HEALTH AND SAFETY PROTOCOL DEVELOPMENT

Through discussions with members of the Steering Committee and the Workers Compensation Board (“WCB”), a training session with WCB, and a training session with staff from the laundromat, a number of health and safety protocols were put in place. The WCB bedbug training workshop had four parts including (1) Violence Prevention and Risk Assessment, (2) Musculoskeletal Injuries, (3) Needle sticks, and (4) Bedbug Infestations. This training seems adequate for individuals who work in locations where bedbugs may be found and provides general information such as how to prevent needle stick injuries.

VANDU also contacted an independent agency for safety advice on the proper use of suits and gloves etc., and added this to the training information on how to protect staff in the handling of awkward infested mattresses in situations where bedbugs can be dropping from the ceilings, etc. The initial training sessions also included information on proper techniques for lifting and carrying heavy objects such as mattresses and furniture.

The use of disposable polypropylene suits with hoods up and taping around the ankles, wrists and neck seems to be best protocol in heavy infestations. The laundering and re-use of the suits was adequate at the lightly infested Regal.

There was a much heavier infestation at the Walton and as a result the re-use of suits was not recommended. It was requested that the TAs and the VC discard suits after each use by sealing them in plastic bags for disposal. It was also strongly recommended that they remove and bag their clothing and shower immediately upon returning home, leaving their clothing in plastic bags until it could be laundered on hot cycles.

With respect to protocols developed regarding the re-entering of rooms after spraying, tenants were advised not to re-enter their rooms for 6-8 hours after spraying, and managers were also instructed to enforce this. Those with health problems such as kidney, liver or respiratory illnesses, as well as women who were pregnant, were advised to stay out of their rooms for 24 hours after spraying and accommodations were provided. It would be important to remain up to date in terms of current recommendations in relation to exposure to bedbugs and exposure to the chemicals used to control them.

10. OVERALL HIGHLIGHTS, CONCLUSIONS AND LESSONS LEARNED

Overall, the pilot was a success. There was an reduction of infested rooms over the course of the pilot and tenants were educated on how to detect bedbugs as well as control and prevent their spread. The peer-to-peer model that was employed was a key factor in the success of the project. Tenants at the Walton in particular witnessed a significant reduction in infestation and had high praise for the tenant assistants.

This process involved 88 occupied rooms in two hotels. During this process there were 136 room treatments in two hotels, approximately 2,566 pounds of laundry washed, four and a half truck loads of garbage were removed, and 59 beds replaced. Based on the total budget, which also includes report writing and public education workshops, the cost per room treatment is \$379/room or \$258/room if the third follow up survey is included in the cost breakdown.²

The pilot project included:

- training sessions with TAs and the VC;
- information sessions with tenants;
- three room by room surveys - the first assessed the extent of the bedbug problem, a second assessed the situation after the initial spray and the need for follow up, and a third assessed several factors including the overall satisfaction with the project and the reduction in the rate of infestation; and

² This is based on the total budget of \$51,570.05 (31 + 9 + 48 + 48 = 136 is the number of rooms treated during the first and second spray; and, 31 + 9 + 30 + 48 + 48 + 34 = 200 is the number of rooms if the third follow-up evaluation is included)

- two small workshops and two large tenant workshops with one final large public workshop planned for February 22, 2007.

Taken together the three larger workshops target owner/landlords, tenants, affected non-profits and the broader community. They provide attendees with information including the following: an overview of the Bedbug Pilot Project; information on detection of bedbugs; what to do if you have them; what generally will and won't work; what to expect with tenant assisted pesticide spraying; and information on how to prevent re-infestation.

The format and material provided in the larger workshops has been tailored to address some of the challenges discovered while carrying out the pilot project including:

- The need for clear and easy to understand information for both tenants and hotel owners. We are using power point presentation combined with written information and samples of what bedbugs look like etc to reach as many people as possible. Translated material would also be helpful as many manager/owners have English as a second language.
- Accurate information on how to treat bedbugs. A surprising number of landlords and tenants use RAID to treat bedbugs. Bombs are also being used by landlords and are simply let off in rooms with no preparation of the room. Both these methods are ineffective and possibly unsafe.

The following highlights provide an overview of the key lessons learned in completing the pilot project:

- The ability of the TAs and VC to interact and work well with the tenants to provide strong **peer-to-peer support** was undoubtedly a key component in the success of the project overall. Assistance from the TAs ranked high and was the number one response at the Regal (40% of the tenants). The comments made about the help the TAs provided during the third follow up were overwhelmingly and quite consistently positive. For example, in the words of one tenant, it was “a really good, well-organized job with lots of information provided, and the people from VANDU were very helpful and polite”. Many other comments made by tenants reinforced this overall assessment.
- The project also helped **build the capacity** of the VANDU TAs and VC and provided **low-threshold employment opportunities**. The pilot would not have been a success without the hard work of the TAs and VC. The pilot also highlighted the importance of feeding and connecting with crews before each shift. The pre-spray day breakfasts ensured volunteers had the energy to complete the job ahead, as well as allowing everyone to spend some time together to be briefed on the day's activities and tasks.

- **Preparation and treatment of ALL rooms** is critical. This proved true even at the Regal Place where the pest company described it as a light infestation. There were some challenges in gaining access to all of the rooms at the Regal which resulted in a less effective treatment. When a building is targeted for bedbug treatment it is important that all rooms in the building be treated and re-treated as required. The best practice for assisting with bedbug eradication is to move forward in a way that meets the legal requirements for keeping tenants properly informed of inspections and spray days and to encourage teamwork between tenants, owners and pesticide companies. It should also be noted **more frequent and comprehensive treatment is needed** to truly reduce or eradicate the infestation of bedbugs. The limited scope of the pilot did not allow for this, but it should be recognized that this is an important aspect to eradicating bedbugs. Should the pilot be extended, VANDU will attempt to carry out follow-up evaluations to determine the longer term impact of the pilot.
- With respect to preventing the re-infestation and/or spread of bedbugs, **monitoring what people bring into buildings**, as well as additional tenant and owner **education and awareness** were also identified as critical. Prevention and early detection are key to halting the spread of bedbugs. It is important for both tenants and owners to consider prevention efforts. For tenants this entails cooperating with necessary treatments and monitoring what is brought into their rooms, and for owners it entails providing proper and consistent treatment, as well as using bedbug proof furniture as much as possible (ie. beds and other furniture with metal frames) and being careful not to recycle infested mattresses.
- Successful treatment requires **being sensitive to the logistics and issues present at each location** in terms of customizing the planning of the project with the managers, tenants, spray companies, laundry and volunteers.
- The pilot enabled us to **develop expertise and build networks within the industry**. As the pilot progressed, our ability to assess the situation and what was required to get the job done improved significantly. For example, obtaining plastic mattress bags to bag infected mattresses during transport was identified as an issue at the Regal. We have now made some connections with manufacturers and wholesalers who may be able to assist and we are also aware of potential developments which may necessitate we find alternative methods for doing this work. For example, there may be fewer mattress bags to utilize for containing infested mattresses due to developments in the industry where new beds are being wrapped and heat sealed individually.

- By working closely with the tenants in preparing their rooms, there were also some **unintended benefits** of doing an intensive treatment process that were not anticipated in developing the pilot project. TAs became highly skilled in dealing with challenging tenant situations such as the bedridden elderly man at the Walton. In turn, **community referral knowledge** was developed in terms of how to seek help for a tenant in a medical crisis. For example, tenants may not respond to ambulance attendants but seem to respond to street nurses who tell them to get medical attention. This was a very positive result in that tenants in difficulty were assisted as opposed to being shifted from one hotel to another.

There were also some unexpected challenges that arose while doing the project. The pilot in many ways was a logistical learning process and once the issue had been remedied, the solution was incorporated into the process to avoid further problems. Some of the challenges encountered during the pilot included:

- Tenants interfering in the notification process. Posters and leaflets were distributed in each hotel to inform tenants of the pilot process and to inform them of the tenant information sessions. At the Regal, some tenants removed notices that were posted in the building and on individual room doors. Word of mouth and door knocking the day of the information session ensured tenants were informed. This issue was not encountered at the Walton as tenants were generally anxious to learn about the pilot and have their heavily infested rooms treated.
- Missing laundry. Some tenants at the Walton requested compensation for laundry they claimed had been lost in the process. Replacement funds/clothing for three tenants was considered, though ultimately two of these claims were not pursued. In addition, a tight laundry accounting system was developed to ensure proper tracking of all laundry. The tracking system involved the Project Coordinator/Supervisor recording how many bags left the hotel for each tenant, and going to the Laundromat to have the bags weighed for each tenant so we could verify that we received back what was sent out. Once the system was implemented, no further claims for lost laundry were made.

This pilot was a first step in halting the proliferation of bedbugs in the community. The pilot allowed VANDU to develop protocols and an overall strategy to effectively carry out such a project successfully and in a way that builds not only the capacity of the community, but also the project participants.

Appendix A – Survey Notice

ATTENTION WALTON HOTEL TENANTS, VANDU WILL BE ON SITE AS FOLLOWS:

For Room Inspections on Saturday August 19th beginning at 2pm.

For Room Preparations on Sunday August 20th beginning at 2pm.

For preparation for re-spraying beginning at 9am on Monday, August 21st (top floor to be re-sprayed) and Tuesday, August 22nd (lower floor to be re-sprayed).

If you have any questions or concerns please call:

Ron Cooper 778-322-6061 or Anne O’Neil 604-724-6665

Appendix B – First Tenant Survey

Tenant's Name and Room #

Have you had your room sprayed for bedbugs before? If so when?

Do you think you have bedbugs now?

If so where do you think they are in the room?

Do you think there will be much that needs to be thrown away?

Are you able to bag your own laundry?

How many large bags – 40 lbs – of laundry do you think you have?

Are you able to move your own furniture and vacuum?

Do you have somewhere to go for 6-8 hrs after spraying?

Do you have any pets?

Have you had your bed replaced recently? If so when?

What size/type of bed do you have?

Do you have any medical issues we should know about?

Other pest problems?

Appendix C – Second Tenant Survey

REINSPECTION – August 19, 2006

Tenant's Name and Room #

Was your room sprayed for bedbugs Aug 8/9th?

Was your mattress replaced? What size?

Did you get vinyl mattress covers?

Do you think you have bedbugs or cockroaches now?

If so where do you think they are in the room?

Do you think there will be much that needs to be thrown away?

Was your laundry done last time? How many bags?

Are you able to bag your own laundry?

Are you able to move your own furniture and vacuum?

Do you have somewhere to go for 6-8 hrs after spraying?

Do you have any pets?

Do you have any medical issues we should know about?

Other pest problems?

Appendix D – Third Follow Up Tenant Survey

3rd Follow Up @ the Walton – Sept 19, 2006

Tenant's Name and Room #

Did you have much of a problem with bedbugs / other pests before spraying?

If so, on a scale of 1 to 10 how bad were they?

And what about now?

Did it help to have people available to help with prepping for the spray?

Do you think you and your neighbours know how to tell if they/you have bedbugs back?

Can you tell if a mattress is infected? A boxspring?

Do you need more information about the bugs, the treatment to get rid of them or what to do if you notice them in your room?

Have you seen folks bring stuff into the hotel you were afraid had bugs?

What do you think can be done to discourage folks from bringing infected stuff into the hotel?

If your friend asked you to help them prepare their room for a bedbug spray would you know how to prep the room?

What was best about the overall process?

Any suggestions for improving the process?

Any follow up needed here?

Appendix E – Overview of Pilot Project Brochure

VANDU presents A Pilot Project:

Modelling an Effective Process to Control Bedbugs in the Downtown Eastside

This project develops, tests and evaluates a more effective community based process to reduce the infestation of bedbugs in Vancouver's DTES.

The problem of bedbugs infecting single room occupancy hotels in our neighbourhood has persisted despite these premises being sprayed and re-sprayed with pesticides. Bedbugs are tiny and resilient and difficult to detect so they spread quickly before folks realize they are infected.

VANDU members are responding by proposing a neighbour-to-neighbour campaign to assist folks to rid themselves and their premises of pests. Our project educates folks about bedbug treatment and prevention, assists with the detection of bugs, the preparation of rooms, and the washing and treatment of personal belongings by trained "tenant assistant" volunteers. We will also provide a \$10 stipend for the day out when you leave your rooms while they are being sprayed and your laundry is washed and infected beds are replaced.

Since bedbugs can come into rooms from infected disposed of furniture not promptly picked up by garbage removal, there will be a garbage removal plan and each room will be re-inspected for bedbugs 2 weeks after the first treatment. The rooms could be inspected for a third time and treated if necessary.

We will begin doing room surveys and helping tenants with preparation on Monday, August 7th and will continue until spraying is completed on Thursday, August 10th

For more information contact Ron Cooper at 778-322-6061 or Ann Livingston at 604 719 5313 or Anne O'Neil at 604-724-6665.

Appendix F – Overview of the Role of VANDU Volunteer Tenant Assistant Brochure

The Role Of VANDU Volunteer Tenant Assistants

We are offering to assist folks to ensure that people are able to get rid of bedbugs from their place and to ensure their neighbours do not harbour bugs that re-enter their rooms. VANDU volunteers and project staff do not necessarily want to enter your suite and will not even need to enter your suite if you are able to prepare your suite for a pesticide spray.

The pesticide company employees are trained and certified to apply pesticides and are bonded and always enter suites to spray while the tenants are out all day because the tenants cannot be present or would be exposed to the chemicals.

The purpose of the VANDU volunteers is to provide assistance and support to folks who cannot thoroughly prepare their rooms for the **spray taking place at the Walton on Wednesday the 9th of August on the top floor and on Thursday, August 10th on the 1st floor.**

VANDU volunteers are available on Tuesday, August 8th mainly for top floor tenants and Wednesday August 9th mainly for bottom floor tenants with:

1. preparing your clothes and bed linens for laundering by putting them in sealed plastic bags --a bonded laundry will be washing them and returning them
2. throwing out anything unwanted
3. removing and inspecting all belongings from furniture, tables, wardrobes and closets. If free from bedbugs then seal in plastic bags --if not bedbug free get it cleaned or notify pesticide person to treat while you are out of your room
4. moving all furniture out from the walls and dismantling your bed and other furniture as much as possible.

5. bagging and removing infested mattresses or fabric furniture
6. removing pictures, electrical outlet covers from walls
7. vacuuming your room
8. emptying cupboards in kitchen and bathroom

The Vancouver Health Bylaw requires property owners to keep their buildings repaired and maintained to prevent pest infestations and to take the necessary steps to eliminate any infestation that occurs. Before a pesticide can be sprayed in a multiple dwelling the owner must notify the tenants in writing at least 72 hours prior to application. This notification is posted throughout the building.

For more information call Ron Cooper 778 322 6061 or Ann Livingston 604 719 5313 or Anne O'Neil 604-724-6665.

Appendix G – What to Expect When Your Room is Treated Brochure

When your room is treated with pesticides

1. Vacate the premises during treatment. Arrange to be out for 4 to 8 hours after the application of chemicals. *(Please inform Ron Cooper if you have a medical need to stay out of your room longer than this period)*
2. When you return to your suite please air out your place opening windows for at least 30 minutes
3. If you need help putting your clean laundry and other belongings away and moving furniture, please let the volunteers know.
4. Avoid vacuuming or damp mopping the edges of the floor for 3 weeks.
5. We will be back in 2 weeks to see if your place is bedbug free – if you have bugs back we will arrange a second pesticide treatment.

For more information call Ron Cooper at 778 322 6061 or Ann Livingston at 604 719 5313 or Anne O’Neil @ 604-724-6665

Appendix H – An Overview of the VANDU Bedbug Pilot Project Brochure

THE VANDU BEDBUG PILOT PROJECT

VANDU is a group of users and former users who work to improve the lives of people living with addiction through user based peer support and education.

The Bedbug Pilot Project developed, tested and evaluated a more effective community based process to reduce bedbug infestation in Vancouver's DTES. The main purpose of this project was to improve the lives of people living in Vancouver's DTES by developing an effective process for reducing bedbug infestation.

VANDU provided peer to peer assistance through trained "tenant assistants" for those whose homes would be sprayed for bedbugs. A professional pesticide company did the spraying. We provided information, as well as hands on support for tenants and owners during the process.

What do tenant assistants provide?

1. Information about what to expect during the pesticide spraying process
2. Support and assistance throughout the spraying process, ie. providing a stipend for the day tenants would need to be out of their rooms, making sure people and pets had a place to go during spraying, and making overnight arrangements for folks who needed to be out of their rooms longer.
3. General clean up of rooms, including vacuuming and throwing out unwanted items.
4. Moving furniture out from the walls and dismantling the bed.
5. Removing wall hangings and electrical outlet covers.
6. Removing infested mattresses and having new mattresses delivered.
7. Bagging clothes and bed linen for professional laundering and having clean laundry delivered.
8. Garbage removal so that infested items are removed promptly.

What did we learn?

- Often the whole building will need to be sprayed and then re-sprayed about 2 weeks later.
- Peer to peer support and assistance is very important because there is much to be done to prepare a room for spraying, launder all clothing, remove infested items and replace mattresses when necessary.
- Ongoing monitoring and periodic re-sprays will likely be required.
- The process takes strong team work to be effective.
- There needs to be a neighbourhood approach to pesticide spraying combined with education about how to get rid of and stay rid of bedbugs.
- We saw a 76% reduction in bedbug infestation in a heavily infested hotel with 2 professional sprays.

The Pilot was funded by Vancouver Agreement, Vancouver Coastal Health, and the Ministry of Employment and Income Assistance, with in kind assistance provided by the City of Vancouver and BC Housing (hotel owners paid for the pesticide treatments)

For more information contact Laszlo Szemok @ 778-892-2847, Anne O'Neil @ 604-724-6665, Ann Livingston @ 604-719-5313 or VANDU @ 604-683-6061

Appendix I – General Facts About Bedbugs Brochure

THE VANDU BEDBUG PILOT PROJECT GENERAL FACTS ABOUT BEDBUGS

Identification

Adult bed bugs are brown to reddish-brown, oval-shaped, flattened, and about 1/4 to 1/2 inch long – about the size and color of an apple seed. Their flat shape allows them to easily hide in cracks and crevices. Their body becomes more elongate, swollen, and dark red after a blood meal. The adults have small, stubby, nonfunctional wing pads. Newly hatched nymphs are nearly colorless, becoming brownish as they mature. Nymphs have the general appearance of adults. Eggs are white and about 1/32 inch long – about the size of two pen dots on a page.

Habits

Bed bugs are fast moving, nocturnal blood-feeders. They feed mostly at night when their host is asleep. They use their sharp mouth pieces to pierce the skin of a host. They inject a salivary fluid containing an anaesthetic that numbs the skin and an anticoagulant that helps them obtain blood. Nymphs may become engorged with blood within three minutes, whereas a full-grown bed bug usually feeds for ten to fifteen minutes. They then crawl away to a hiding place to digest the meal.

Bed bugs hide during the day in dark, protected sites. They seem to prefer fabric, wood, and paper surfaces. They usually hide in close proximity to the host (usually within 15 to 20 ft.), although they can travel further distances. Bed bugs initially can be found in seams, and folds of mattresses, later spreading to other places.

In heavier infestations, they may also occupy hiding places farther from the bed. They may hide in window and door frames, electrical boxes, floor cracks, baseboards, furniture, and under the tack board of wall-to-wall carpeting. Bed bugs often crawl upward to hide in pictures, wall hangings, drapery pleats, loosened wallpaper, cracks in plaster, and ceiling moldings.

Tell-tale Signs (we may not see the actual bedbugs)

A bed bug infestation can be recognized by blood stains from crushed bugs or by rusty (sometimes dark) spots of excrement on sheets and mattresses, bed clothes, and walls. Fecal spots, eggshells, and shed skins may be found in the vicinity of their hiding places. An offensive, sweet, musty odor from their scent glands may be detected when bed bug infestations are severe.



SOME FREQUENTLY ASKED QUESTIONS ABOUT BEDBUGS

Does a place have to be dirty or unsanitary to have bedbugs?

No, it is NOT TRUE that bedbugs can only thrive in poor sanitary conditions. Bedbugs can survive and thrive anywhere where they have a place to hide from light and a periodically present host. Bedbugs have been found in five star hotels, hospital waiting rooms, university dorms, schools, movie theatres and health clubs.

What are the main effects of bedbug infestation?

A proliferation of bedbugs is not an acceptable living condition though they are not thought to transmit disease. Having a bedbug infestation often causes a great deal anxiety and insomnia. Also bedbug bites can lead to secondary infections requiring medical attention.

What do they look like?

Adult bedbugs are about ¼ to ½ an inch long. They are about the size and color of apple seeds. They are generally flattened. After feeding they are puffed up and full of blood. Before becoming adults they go through 5 stages and are smaller and lighter in color.

What are some other traits and habits of bedbugs?

They are flightless although they can crawl over floors, walls and ceilings. Their only source of nutrition is blood. They feed mainly on humans, although they can also feed on livestock, rodents and pets. They mostly hide during the day and come out at night. They will usually be found in and around our beds. It is important to know that we can have an infestation and not see the actual bedbugs.

How do we know if we have them?

Bedbugs can be very difficult to detect. People often know they have them because they are being bitten at night. Sometimes there will be three bites in a row. Reactions vary from no reaction to itchy, stinging bumps and welts up to 1 cm in size. They also leave “fecal spots” along mattress seams and box-springs etc. With severe infestation there can be a musty or sickly sweet odor which some describe as being like the smell of raspberries.

What are “fecal spots”?

Fecal spots are brownish-red spots of digested blood that the bedbugs leave in places they have been. Fecal spotting will often be found along mattress seams, bed frames and box springs, as well as on bed

clothes and other clothing. Once the infestation has reached a certain level the fecal spotting will often appear in clusters because bedbugs like to hang out in groups

The Pilot was funded by Vancouver Agreement, Vancouver Coastal Health, and the Ministry of Employment and Income Assistance, with in kind assistance provided by the City of Vancouver and BC Housing (hotel owners paid for the pesticide treatments)

For more information contact Laszlo Szemok @ 778-892-2847, Anne O'Neil @ 604-724-6665, Ann Livingston @ 604-719-5313 or VANDU @ 604-683-6061

Appendix J – Information on the Elimination and Control of Bedbugs Brochure

THE VANDU BEDBUG PILOT PROJECT

ELIMINATION AND CONTROL OF BEDBUGS

Control

Control of bed bugs is best achieved by following an approach that involves multiple tactics, such as preventive measures, inspection, sanitation, and application of professional pesticide chemicals to targeted sites. Severe infestations are usually best handled by a licensed pest management professional.

Prevention

Do not bring infested items into our home. It is important to carefully inspect the clothing and baggage of travelers, being on the lookout for bed bugs and their tell-tale fecal spots. Also, inspect secondhand beds, bedding, and furniture. Caulk cracks and crevices.

Inspection

Inspection efforts should concentrate on the mattress, box springs, and bed frame, as well as cracks and crevices that the bed bugs may hide in during the day or when digesting a blood meal. Other places to check include window and door frames, floor cracks, carpet tack boards, baseboards, electrical boxes, furniture, pictures, wall hangings, drapery pleats, loosened wallpaper, cracks in plaster, and ceiling moldings.

Sanitation

Sanitation measures include frequently vacuuming the mattress and premises, laundering bedding and clothing in hot water, and cleaning and sanitizing dwellings. After vacuuming, immediately place the vacuum cleaner bag in a plastic bag, seal tightly, and discard in a container outdoors. A stiff brush can be used to scrub the mattress seams to dislodge bed bugs and eggs. Repair cracks in plaster and glue down loosened wallpaper to eliminate bed bug harborage sites.

Trapping

Mattresses can be enclosed in a zippered vinyl mattress cover for further protection. Running duct tape along the zipper is a good idea as well. Sticky traps or glue boards may be used to capture bed bugs that wander about. However, the effectiveness of these traps is not well documented.

SOME FREQUENTLY ASKED QUESTIONS ABOUT WHAT TO DO WHEN WE THINK WE HAVE BEDBUGS

What should I do about the bites?

Although bedbugs are not thought to transmit disease, they are a significant nuisance and can cause stress, anxiety and insomnia. We should seek medical attention if we are having an extreme or unusual reaction or if it looks like the bites are becoming infected.

Can I get rid of bedbugs myself?

Bedbugs can be very difficult to get rid of. “Over the counter” remedies will not generally work. We have to tell the owner / manager where we live that we think we have them. If we have bedbugs, a pesticide company will need to be called to spray professionally. Be prepared for the owner/ manager to do a room inspection and try to assist by getting a few samples if possible and pointing out other signs, ie. fecal spotting.

What can I do while waiting for the spray?

Think in terms of containing the infestation and making a space for yourself that is as bedbug free as possible.

Zippered vinyl mattress covers can be used to contain the infestation and give us some relief while waiting for a spray. They are available for about \$10 at the Army and Navy Store. You can also ask for one through social assistance, letting them know what you need it for. It is a good idea to run duct tape along the zipper once the mattress cover is on your bed.

We have also heard that Lysol bathroom foam spray can kill bedbugs on contact. So it can be helpful to launder or shake out your bed clothes away from your bed, move your bed out from the wall to prevent more bugs from crawling onto it, and spray a circle of Lysol bathroom foam spray around your bed. These measures will not eliminate the need for professional spraying.

The Pilot was funded by Vancouver Agreement, Vancouver Coastal Health, and the Ministry of Employment and Income Assistance, with in kind assistance provided by the City of Vancouver and BC Housing (hotel owners paid for the pesticide treatments)

For more information contact Laszlo Szemok @ 778-892-2847, Anne O’Neil @ 604-724-6665, Ann Livingston @ 604-719-5313 or VANDU @ 604-683-6061

Appendix K – More Information on Bedbug Prevention Brochure

THE VANDU BEDBUG PILOT PROJECT: MORE ON BEDBUG PREVENTION

Once our bedbug infestation is under control, or to prevent infestation, there are some techniques we can follow to keep bedbug free.

Don't bring them into your home

They usually come into our homes on items we bring home or from visitors. Found or second hand items are always suspect, so inspect secondhand beds, bedding, furniture, baggage, and clothing for bed bugs before bringing them into your home. If you are concerned about a visitor bringing bedbugs to your home, you can ask them to put their belongings in plastic bags and tie the bags up while they visit. You can also ask visitors to put their clothing in plastic bags, take a shower, and change into clothing you provide while they are visiting you.

Repair and Sanitation

Although having bedbugs is not about whether your place is clean and tidy, the fact is they are easier to control and keep away when things are clean and in a good state of repair. It is important to thoroughly vacuum floors, furniture, mattresses, pillows, upholstery, and curtains. Focus on creases, buttons, and folds when vacuuming and cleaning. After vacuuming, dispose of the vacuum bag in a plastic bag, seal the bag tightly, and immediately remove it from your home. Keep all clothing, bedding, curtains laundered (hot water for washing and hot cycle on the dryer is better). It is also important to caulk cracks and crevices in walls, ceilings, and floors. Paint walls and ceilings where paint is beginning to peel or chip.

Monitoring

Get in the habit of inspecting your home for evidence of a bed bug infestation, and/or allow for others who know how to do this to help you. Look for live bugs in furniture, in bedding, behind headboards, in cracks and crevices, around windows and doors, and near chimneys. Keep an eye out for other evidence of bedbugs (you may never see the actual bedbugs). Other evidence includes shed skins from molting, eggs, egg casings, and blood stains or dark spots (fecal spotting). Some bed bug infestations are reported to emit a sickly sweet or musty odor that is sometimes also describes as smelling like raspberries.

Other Preventative Techniques

Think "bedbug free" in terms of furniture and beds – ie. metal frames & plastic chairs. Move your bed a little ways out from the wall. Cover bed legs with a gel or Vaseline and/or place the legs of your bed in small containers of liquid to prevent bed bugs from climbing from the floor to the bed. Lysol bathroom foam cleaner may be a good way to keep them away. Diatomaceous earth preparations can also be a good preventative.

The Pilot was funded by Vancouver Agreement, Vancouver Coastal Health, and the Ministry of Employment and Income Assistance, with in kind assistance provided by the City of Vancouver and BC Housing (hotel owners paid for the pesticide treatments)

For more information contact Laszlo Szemok @ 778-892-2847, Anne O'Neil @ 604-724-6665, Ann Livingston @ 604-719-5313 or VANDU @ 604-683-6061

Appendix L – Public Workshop Evaluation

Bedbug Workshop – November 15th, 2006 - First United Church

(1) Are you or have you been personally affected by bedbugs? If so, how?

(2) What was the most important thing you learned today?

(3) Are there other things you would like to know about bedbugs, how to get rid of them and stay rid of them?

(4) Do you think more information and workshops would be helpful in this community?

(5) Did you find the workshop informative?

- 1 – not at all
- 2 – somewhat informative
- 3- moderately informative
- 4 – very informative
- 5 – was excellent

(6) Did the presentation keep your attention?

- 1 – not at all
- 2 – somewhat
- 3- moderately
- 4 – very much
- 5 – was excellent

(7) Do you have any suggestions for how to improve the workshop?