

Sample Protocol for Bed Bugs Found in NC Schools

Recommendations for Limiting the Spread of Bed Bugs in Schools

North Carolina School IPM Program
N.C. State University

SAMPLE PROTOCOL FOR BED BUGS FOUND IN NC SCHOOLS

I. INTRODUCTION

Bed bugs are a continuing problem across North Carolina, the U.S., and even internationally. Virtually any place where people stay or travel could potentially have bed bugs. Schools are no exception to this problem because of the number of people – students, teachers, and staff - that may unknowingly encounter bed bugs somewhere in their travels or from visitors to their homes and workplaces.

“Concern” can easily become fear particularly when there is a lack of communication among all concerned parties about the facts of a problem and this can lead to over-reaction and the expenditure of time and money unnecessarily. These guidelines were developed by the NCSU School IPM Program to help NC School Systems to become more aware of the problem and to be prepared to deal with situations where a suspected bed bug is found on school premises and/or on an individual (i.e., child, staff or visitor) or his/her personal belongings.

Watch for updates to this document on the School IPM website (schoolipm.ncsu.edu)

If you have any questions or suggestions about the information in this document, please contact

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Any mention of brand names or listing of commercial products or services in the publication does not imply endorsements by North Carolina Cooperative Extension nor discrimination against similar products or services. The status of pesticide registrations and use patterns are subject to change by actions of state and federal regulatory agencies. Before applying any chemical, always obtain current information about its use and read the product label carefully. For assistance, contact the Cooperative Extension Center in your county.

II. Preparing for a Possible Bed Bug Problem:

- A. Suggested Supplies: disposable gloves, trash bags, plastic tarps, sealable plastic storage bins, and masking/adhesive tape to secure and move (if necessary) any infested items such as clothing, backpacks, desks and other equipment.
- B. Designate at least one room/area where potentially infested items can be held temporarily (several days, if necessary). Large items such as desks or equipment can be moved to a storage room. However, you must be able to keep these items isolated to minimize the risk of bed bugs moving and infesting other items in the room. Use sealable clear plastic bins to hold personal items, such as backpacks, books, and clothing. Label the bins or items to prevent people from unknowingly handling these infested items without taking proper precautions.
- C. Initiate a policy of keeping all “Lost and Found” clothing, backpacks, books, etc. in sealable plastic storage bins (rather than in cardboard boxes), preferably in a central location.
- D. Maintain a list of designated school personnel who need to be immediately aware of a bed bug problem in order to address the issue and to deal with questions from parents, staff, and potentially the news media. The list should include (but not necessarily limited to): an on-site contact, the IPM Coordinator, and nurse), and designated district office staff. It would be useful to have individuals within a school or school system trained to accurately identify bed bugs. Although bed bugs are perceived as a “public health issue” similar to head lice, the approach to dealing with them is very different because head lice remain in close association with their hosts and the primary methods of spreading head lice remain relatively narrow (hair brushes, hats, etc.) and more easily controlled. Also, head lice do **not** warrant possible chemical treatments of the building.

III. Responding to a Potential Bed Bug Problem: Overview

In the event that bed bugs (or what are presumed to be bed bugs) are reported in a school building or on other school property (e.g., school/activity bus), the priorities should be:

- a) to address the problem as quickly as possible in order to limit potential spread and to cause minimal disruption to the learning environment
 - b) to avoid bringing undue attention to any individuals directly involved.
- A. **Verify that the problem is due to bed bugs.** Misidentification of bed bugs can cause unnecessary concerns and problems as well as cost money for unnecessary Reports of “bites” or bite-like sensations or marks, should be taken seriously.

However, unsubstantiated claims of “being bitten” or even a medical diagnosis of bed bug bites should not be considered sufficiently reliable for declaring that there is actually a bed bug infestation in the school.

- B. Try to determine the source:
 - 1. Where were the bed bugs found in the school (classroom, lockers, office, gym or other facility, or transportation, etc.)?
 - 2. Were they found associated with one person or more than one?
 - 3. If more than one person is involved, are those individuals related or have something in common such as being neighbors, classmates, adjoining lockers, use the same bus or car to travel to/from school, etc.
 - 4. Does the individual (student or staff) have bed bugs at home?
- C. Determine the extent of any infestation in the school facility. This effort will be based largely on the information gathered in **Section III.B**. Details of your procedure are outlined below in **Section IV**.
- D. Take appropriate corrective measures bearing in mind the safety of all concerned.
- E. Educate parents and staff as to precautions they need to take to reduce the likelihood of accidentally moving bed bugs between the school and their homes or other places. If the affected individual has bed bugs at home, it is critical that this problem be addressed quickly. These situations can be very complicated particularly if the individual does not have the financial resources to address the problem. Try to engage other community resources such as county health departments, social service agencies, non-profit organizations, etc. Unless the problem at home is addressed quickly, you will face a continued problem with bed bugs being brought to school and possibly spread to other people.

IV. Responding to a Potential Bed Bug Problem: Implementing Your Plan

- A. Notify the designated school system personnel as outlined in Section II.D. Make sure that it is clearly conveyed whether the problem is assumed to be bed bugs or has been positively confirmed.
- B. Conduct a thorough inspection (visual and/or using a canine team) to identify all affected sites. Although school staff can help with the inspection (e.g., with moving or organizing items), all efforts to eliminate the problem must be led by individuals who have a clear understanding of bed bugs and what signs of bed bug activity to look for: such as actual bed bugs, shed skins, and fecal smears (see the publication, “Bed Bugs” at the end of this document.)

The extent of the search should be based on a number of factors including:

1. The number of bed bugs found.
2. The location of the insects - e.g., classroom, office & work areas, other common areas (for students or staff).
3. Where they were found on or in - e.g., equipment, desks, lockers/cubbyholes, backpacks, exterior clothing, shoes, jackets, books, book bags.**
4. The nature of the building construction, i.e., can the insects actively move to/from an adjoining room or area. Make sure any inspections include the entire room and adjoining areas as well.

*** Note: If the situation involves a student, inform the parent as soon as possible. Inspections need to be expedited in order to minimize the risk of spreading bed bugs in the school. However, inspections of students' personal items should adhere to school policies regarding student privacy. The child or individual does not need to be removed from the classroom/office unless it facilitates the inspection process nor do they need to be excluded from school.*

Some schools may employ the services of pest management professionals that use canine detection teams, i.e., dogs specifically trained to detect bed bugs. While this obviously adds to the cost of any control program, properly trained dogs are typically more efficient in checking areas, i.e., they can check more areas (including more complicated and cluttered areas like cubby holes) in a shorter amount of time as compared to a pest control service technician. Even if a canine is used for the bed bug inspections, it is still important that the pest control service (contracted or in-house) more closely check the areas to which the dog “alerted” and to look for the specific signs of a bed bug infestation and verify that the problem is indeed bed bugs **before** determining what control measures are needed. Excessive clutter can interfere with proper visual inspection of a site.

Note: If you contract with a pest control service that uses canine detection teams, ask for information about the training and certification of both the dog and the handler.

Gather additional information that may help track the source of a problem. Here are some suggested questions to pose (depending on the nature of your specific problem):

1. Does the student/teacher switch rooms over the course of the day? Identify and inspect those rooms as well?
2. How does the student travel to and from school?
3. Does the student participate in after-school activities (athletics, band, etc.)?

4. Where may they have taken potentially-infested personal items with them?
 5. Where does the person keep their personal belongings during the day?
 6. Have any items been brought into the room/school? (e.g., boxes, bags, “lost and found” items, etc.)?
 7. If this involves an administrative office – were there any recent visitors to the office (who may have brought bed bug with them in a coat, handbag, backpack, etc.)
 8. Has the individual (student, staff, etc.) experienced the same problem at home?
 9. Have they done any traveling (particularly involving overnight stays at a hotel or other vacation rental property)?
 10. Have they had any visitors stay at their home recently?
- D. Collect as many bed bug specimens as possible for confirmation. Use tweezers or an index card to pick up specimens. Place specimens in a small alcohol-filled vial (ordinary rubbing alcohol will work) or wrap them in a tissue or paper towel to protect them from damage, and then place them into a plastic zip-lock type bag and seal the bag tightly (and place inside another bag).

If specimens cannot be identified locally, send them to:

Dr. Michael Waldvogel
 Department of Entomology
 NCSU – Campus Box 7613
 100 Derieux Place ← Add this line if using Fed/Ex or UPS
 Raleigh, NC 27695-7613
 (919.515.8881)

If you can get a clear digital image of the insect (close enough to show distinctive features), you can also try emailing to Mike Waldvogel (mike_waldvogel@ncsu.edu) or Patty Alder (patricia_alder@ncsu.edu).

- E. Student-related incidents (classrooms, lockers, other student areas):

If the problem is noticed early in the day, separate and inspect (in an office, not in the classroom with other students present) any items that the child might need for class during the remainder of the day and return them to the student and allow them to return to their regular class routine. There is no need to send the child home. Double bag any remaining items, such as book bags or personal items, using plastic zip-lock bags (check seal on bags) or trash bags and seal them tightly. Keep these bagged item(s) in a designated (labeled) sealable plastic

storage tub out of site in the classroom or office or other secure area where they will remain undisturbed until the child retrieves them at the end of the day. Instruct the child not to open the bag until they arrive home. After the contents are removed, inspect the storage container for any “stray” bed bugs. Do not treat the storage container with pesticides; simply wash it with detergent or wipe it down with alcohol.

If evidence suggests that the problem originated with the student rather than with the school, ask the relevant questions listed above in section B. Also, find out if the student rode on a bus or was driven to school by a parent/guardian or other family member or neighbor. When a bus (or other transportation service) is involved, ask the student where he/she sat in the school bus that morning. The school Transportation Director should contact the operator to bring the bus immediately to the school or maintenance facility for inspection. (Check if the bus was used subsequent to dropping off the student). If the problem is noticed late in the day, the seat occupied by the student and those in adjacent rows should be inspected before allowing students to board the bus. Do not allow students/staff to use potentially infested items.

F. Incidences involving school faculty and staff:

If the problem occurs in an office or other staff area, follow the same procedure outlined above in #3 and have them isolate any unneeded personal items. Any bags or other items which they brought into the building should be placed into a sealable plastic bag (or trash bag) and can remain with them. Do not apply pesticides on bags/backpacks or anywhere else while the room/area is occupied. Ask the room occupant the relevant questions listed in section B. The answers to these questions can help in you prioritizing your inspections (e.g., chairs, clothes closets, etc.) and in planning any treatments.



V. Education & Notification:

Administrators should make an effort to educate the school community about being proactive as well as reactive to bed bug problems. The following information is available in this document:

- A. School IPM Publication – “*Bed Bugs: What you need to know*” (which is included at the end of this document) or other comparable bed bug fact sheets.
- B. Parent or Guardian notification letter (a sample letter is attached).

- C. The school administration should use its discretion in determining who needs to be notified based on the specific circumstances of the problem. However, it is in the best interest of all concerned parties that at least the parent of any child identified as having bed bugs on them (or their personal property) should be made aware of any problem that involves their child and potentially their home.

VI. Preparing For Treatment:

Bed bug treatments, as with any pest control procedures, should follow the school's IPM Policies as closely as possible. The IPM Coordinator or a designate should contact the school's pest control service (contracted or in-house). Most pest control service contracts cover routine pest control issues, such as cockroaches, ants, rodents, etc., but may exclude or have an addendum for addressing bed bug infestations. Regardless of your contract's terms, the bed bug problem must be addressed quickly and efficiently. In-house pest control services should be used only if the employees have adequate training and knowledge of bed bug control. Otherwise, the school should contract the services of a licensed pest control company if a bed bug treatment is deemed necessary. Any areas requiring treatment **must** be prepared appropriately. There is a checklist found at the end of this document that serves as a guideline. However, talk to your pest control contractor about any specific issues that need to be addressed before any treatment begins.

Compliance with the notification requirements of School Children's Health Act -

When bed bugs are found in a school, steps need to be taken as soon as possible to contain and eliminate the problem. In many instances, this may entail the use of pesticide products and/or application methods that are not "exempt" from the parents/staff notification procedure required under the North Carolina School Children's Health Act [see *G.S. 115C-47(47)a* or <http://schoolipm.ncsu.edu/laws.htm>]. In such emergency situations, quick action is important and you should not delay any necessary pesticide applications in order to satisfy the 72 hour notification policy. Perform all necessary control measures (including pesticide applications) and contact parents/staff that are on the notification list as soon as possible. In most cases, teachers and staff who are on-site can be notified verbally prior to the application. If there is a concern about a student (or group of students) whose parents may prefer that they not reoccupy any treated area for the remainder of the day, then the principal (or principal's designate) should offer an option that allows the students to remain on-site in an untreated area.

The types of pesticides available can change as new products are brought to market and some older products may be removed. The US Environmental Protection Agency (USEPA) maintains a list of currently registered products at their website (<http://cfpub.epa.gov/opprpref/bedbug/>).

The IPM Coordinator should consult with the pest control service to determine what type of treatment will be done and what preparation the school needs to make prior to any further inspection and/or treatment. The particular site infested and the amount of available funding will dictate what can be done.

- A. Heat (“thermoremediation”) is an effective non-chemical control method **when done properly**. Place loose items such as carpet mat squares (e.g., mats used in class by small children) into a clothes dryer at the highest setting for approximately 30-40 minutes. You may want to test some items first to make sure that they are not damaged in the dryer. If a dryer is not available at the school, place the items into trash bags, seal the bags, and transport them to a laundry site. Read the label on items before subjecting to dryer temperatures. Heat treatment of an entire room (including most of contents) requires special equipment (such as the heating unit shown at the right, plus fans and monitoring equipment) and will require most of a school day (or after school hours) in order to be completed. These heat treatments require that suspected infested items reach the minimum lethal temperature (usually in excess of 125°F). In most cases, heat is not the sole control measure used. Most room/building thermoremediation treatments will include limited (crack & crevice and/or void*) pesticide treatments and so they should be performed by licensed pest control companies. It also requires special training to get the job done correctly, safely, and effectively.



Note: Crack & Crevice and void treatments are exempt from notification under the North Carolina School Children’s Health Act.

Steam can be used on certain types of surfaces and items but it can also damage some materials. The same is true for freezing. If you use steam or freezing, run a test on one item (or an inconspicuous area of an item) to see if damage occurs.

- B. Use vacuum cleaners to remove bed bugs. HEPA vacuums are the best choice. When finished, place the vacuum cleaner bag into a trash bag before leaving the area and then discard the bag immediately. Never use the vacuum cleaner in an uninfested area without first replacing the bag. Custodial staff need to follow this policy at least until any infestation has been eliminated.
- C. Vinyl or other non-fabric items such as floor mats, desks, and chairs in classrooms can be wiped down with alcohol or a similar product. Make sure that seams, stitching, etc. are inspected and cleaned. Allow surfaces to dry thoroughly before stacking items or allowing students/staff to use them.

D. Non-residual insecticides (such as those containing essential oils) can be used but bear in mind that they work strictly by “contact only” and provide no residual protection if bed bugs (eggs, nymphs or adults) were missed during an inspection and the infestation may continue.

E. If necessary for proper treatment, loosen floor carpets along their borders within infested classrooms and offices. Carpets that are glued in place will likely need to be repaired or replaced. Coving/borders may also need to be loosened for proper crack & crevice treatment.

F. Remove/open items that are not permanently attached to the walls but leave them in the room. This may include posters, clocks, PA speakers, electrical switch and outlet covers, etc. Exercise caution when handling potentially infested items so that you do not get bed bugs on your clothing.



Bed bugs can move along wires and inside conduits such as they wall-mounted units.

G. Reduce clutter particularly in storage areas (closets, cubbies, lockers) that will impede any further inspection and/or planned treatment.

H. Remove (preferably) or cover any food items from areas that may be exposed to pesticides during an application.

I. In athletic facilities (locker rooms, weight rooms, etc.), make sure that the athletes' personal equipment (mouth guards, helmets, personal clothing, etc.) are not exposed to pesticides. These items can be disinfected with alcohol or another appropriate product.

Note: Only essential employees should remain in affected areas during any treatment. Follow all label precautions regarding personal protective equipment and/or restrictions or requirements concerning re-entry to the rooms and cleaning of any surfaces potentially contaminated surfaces.

VII. Post-Treatment Evaluation

Given the life cycle and behavior of bed bugs, post-treatment evaluation of your programs success is essential. The isolation-containment procedures outlined above need to continue until you are certain that the bed bug infestation has been eliminated. For that reason, repeated weekly (minimum) inspections and monitoring are important. We recommend that you monitor the sites in question for at least **two months** following treatment.

Treatment Failures

When a bed bug problem continues in spite of a treatment, you need to look at possible reasons and take steps to: a) correct the current problem, and b) prevent another failure. There can be many explanations for why bed bugs were not eliminated and these need to be reviewed carefully:

A. Ineffective or incomplete treatment by applicator:

1. Did the inspection miss some bed bug stages and locations?
 - a) Was the inspection done visually-only or using a canine team?
 - b) If a canine team was used, was information provided on the certification and routine training of the team?
 - c) Were the bed bugs found in an area that had been treated or not treated?
2. Was a chemical treatment-only used?
 - a) Is it possible the bed bugs were resistant to the chemical (at this time, this is more likely to occur with a pyrethroid insecticide)
 - b) Was a crack & crevice treatment performed?
 - c) Were some target areas missed during the treatment?
3. Was a heat treatment used?
 - a) Was the site properly prepared for heat treatment?
 - b) Were temperature monitors and fans used?
 - c) Was the necessary minimum temperature attained on all temperature monitors and was the temperature held for the required time?
4. Was a post-treatment inspection performed to look for live bed bugs?

B. Incomplete cooperation in preparation and post-treatment activities:

1. Did the PMP or in-house pest management technician provide instructions on preparing the site for treatment and were those instructions followed?
2. Were potentially infested items removed prior to treatment and subsequently brought back?
3. Could someone have reintroduced bed bugs from an outside source, such as their home, car, etc.?

VIII. **Steps to preventing new infestations**

Even after bed bugs are eliminated, there will always be the possibility of a re-infestation from another source. Currently, there are no recommended preventive pesticide treatments for bed bugs. Given the size and diverse environmental conditions in a typical school, such preventive treatments are not effective or economically sound. Educating your key audiences (parents, students, teachers and staff) is important to minimize the likelihood of a new infestation and to improve cooperation in remedying any problems that do arise in the future.

1. Reduce clutter in all classrooms, offices, and storage areas
2. Be careful with bringing used items into classrooms and offices. This includes furniture, carpets, books, cardboard boxes and particularly items that are purchased at yard sales or online. Inspect any items carefully before they are allowed into a classroom.
3. Remind teachers and staff to be observant of students. Check your classrooms daily for signs of bed bugs, particularly around desks or other areas of student activity including where they may store personal items. Remember – “bites” are not necessarily signs of bed bug activity but they are a signal that we need to be observant.
4. Report anything suspicious (that looks like a bed bug or signs of bed bug activity) to your IPM Coordinator as soon possible. The sooner a problem is investigated, the less likely that it will become serious.

Note: Downloadable MS-Word Versions of this letter are available at schoolipm.ncsu.edu/bedbugs.htm

SAMPLE

Bed bugs Found in School – Parent Notification Letter

(Use school letterhead)

Dear Parent or Guardian:

We have recently found a bed bug specimen in your child’s classroom. Bed bugs are small insects that live by feeding on human blood, usually at night. The bite is painless and may or may not become swollen and itchy, much like that of a mosquito bite. While bed bugs are a nuisance, they are not known to spread disease. If you have concerns for you or your child, you should call your family doctor.

The source of bed bugs often cannot be determined, as bed bugs may be found in many places. Even though it is unlikely for bed bugs to infest a school, *(fill in your school district here)*, will conduct an inspection and, if necessary, the area the bed bug is found will be treated. *(Fill in your school district here)* will continue to work to identify bed bugs and provide thorough inspections of schools.

If you have any questions regarding bed bugs within your school, please contact Principal *(fill in principal’s name and contact information here)*. If you have any questions regarding bed bugs found in your home, please your local County Cooperative Extension or Environmental Health Centers

Sincerely,

Principal or IPM Coordinator

Sample letter adapted from by the Central Ohio Bed Bug Task Force

Muestra

Chinches de cama encontradas en las Escuelas – Notificación al padre de familia

(Use papel con membrete de la escuela)

Estimado Padre de Familia o apoderado:

Recientemente hemos encontrado chinches de cama en el salón de clase de su niño. Las chinches de cama son pequeños insectos que sobreviven alimentándose de sangre humana, normalmente en las noches. La picadura no causa dolor y puede o no hincharse y picar, es bastante parecida a la picadura de un mosquito. Mientras las chinches de cama causan molestias, no se conoce de que transmitan enfermedades. Si usted está preocupado por su niño, debería llamar a su doctor de familia.

El origen de las chinches de cama no puede ser determinado, porque las chinches pueden ser encontradas en muchos lugares. Aunque es casi imposible de que las chinches infesten completamente la escuela, *(llene aquí el nombre de la escuela)*, conducirá una inspección y, de ser necesario, el área donde se encuentren chinches será tratada. *(Llene el nombre de la escuela aquí)* continuará trabajando para identificar las chinches de cama y proveer inspección rigurosa de las escuelas.

Si tiene preguntas sobre chinches de cama en su escuela, por favor contacte al director de la escuela *(Llene el nombre y la información de contacto del director de la escuela aquí)*. Si usted tiene preguntas sobre chinches de cama que encuentre en su casa, por favor contacte los centros de Extensión cooperativa o Salud Ambiental de su condado

Atentamente,

Director o Coordinador de Manejo Integrado de Plagas

CHECKLIST - PREPARING YOUR SCHOOL FOR BED BUG TREATMENT

- ___ IPM Coordinator should facilitate any required parent-staff notification of a pending pesticide application (or notification after the treatment is done).
- ___ Wrap (or place in sealable containers) any infested items that need to be moved.
- ___ Do not move items to another uninfested room without first inspecting them thoroughly. Move infested items only to the designated area/room if necessary.
- ___ Bag items that have been designated for drying (carpet squares, pillows, towels, stuffed animals, etc.) and take to laundry. Do not overload dryer. Use high heat for at least 45 minutes. Double bag all items right after drying and do not return to classroom/office until the room has been treated or otherwise determined to be bed bug free.
- ___ Inspect items that cannot be laundered/dried (books, electronics, picture frames, plastic toys, etc.) thoroughly inspected and placed into plastic bags or bins if bed bug free.
- ___ Vacuum and wash all floors. Replace vacuum cleaner bag before using the vacuum in other parts of the school. To prevent bed bugs from escaping, be sure to place the vacuum bag into a plastic bag before disposing of it.
- ___ Disinfect desks and chairs in classrooms. Check carefully for bed bugs in crevices and joints of furniture
- ___ Vacuum and wash all floors. To prevent bed bugs from escaping, be sure to place the vacuum bag into a plastic bag before disposing of it.
- ___ Vacuum couches and chairs in offices. Bed bugs are often found in couches and upholstered chairs. If possible, turn the furniture over or on its side/back and vacuum underneath as well. If there is a dust cover attached on the underside, pull it back and vacuum areas that will need to be treated. Double-bag and discard the vacuum bags in an outdoor trashcan immediately to avoid re-introducing or spreading any bed bugs caught in the vacuum.
- ___ Empty lockers and cubby holes that require some chemical treatment. Reduce in storage cabinets that require treatment. Do not reuse student storage areas without cleaning them first.
- ___ Provide access to walls, closets, and areas around furniture to allow for a thorough inspection and treatment.

Bed Bug Reference Information

Because we are constantly adding information to our bed bug resource page, please refer to the information found on the School IPM Website at:

<http://schoolipm.ncsu.edu/bedbugs.htm>