



National Center for Healthy Housing

Laws, Rules, and Codes for Healthier Homes: Review of Approaches Affecting Existing Homes

The National Center for Healthy Housing has identified five different, complementary regulatory approaches used to make existing homes healthier and safer. This analysis focuses on regulatory approaches that address current conditions in existing homes. It does not address new construction or how rehabilitation must be conducted in existing homes.

1. Housing/Property Maintenance Code:

The U.S. Department of Housing and Urban Development (HUD) sets standards for housing receiving federal assistance. For example, housing funded through Housing Choice Vouchers (formerly known as Tenant-Based Section 8 Voucher) must comply with Housing Quality Standards (HQS). See Part A (following) for more information on HQS. HUD also sets general standards for housing covered by mortgage insurance. For all other housing, there are no national codes for existing housing or property maintenance. HUD sets standards for the design and construction of manufactured housing and housing receiving federal assistance but does not regulate the maintenance of that housing.

While all states have a code for new construction or major rehabilitation projects, few states have adopted standards mandating minimum conditions in or requiring maintenance of existing housing. In the absence of state standards, most urban and many suburban local jurisdictions adopted a housing or property maintenance code. The nation's model housing or property maintenance code is the International Property Maintenance Code (IPMC), which is managed by the International Code Council (ICC). Two states – New York and Virginia – and more than 600 local jurisdictions have adopted the IPMC with modifications. See Part B (following) for more information on the IPMC.

2. Health/Sanitation Code:

There is no national health code for housing. State and local agencies, mostly in the Northeast, have adopted health or sanitation codes that address health and safety hazards in housing. Many urban areas have also adopted vector control programs generally focused on rodents and mosquito harborage. The leading example of a state health or sanitation code is the State Sanitary Code for the State of Massachusetts. The only model health or sanitation code was adopted by the American Public Health Association (APHA) in 1938 and has not been updated. The U.S. Centers for Disease Control and Prevention (CDC) used this model code as the foundation for its

Healthy Homes Reference Manual. See Part C (following) for more information on the APHA model health/sanitation code.

3. Landlord-Tenant Law:

There is no national landlord-tenant law for rental housing. The Federal Lead Hazard Disclosure adopted by both the U.S. Environmental Protection Agency (EPA) and HUD requires landlords, sellers and their agents to disclose potential and known lead hazards in housing built before 1978. HUD also enforces the Fair Housing Law, which requires reasonable accommodations for people with disabilities. Most states and, in the absence of state action, many urban jurisdictions have adopted laws establishing minimum roles and responsibilities for landlords and tenants in rental housing. These codes typically require both parties to comply with the applicable health or housing code. The parties can enforce this requirement through the courts in a private civil suit. The nation's model landlord-tenant law is the Uniform Residential Landlord and Tenant Act (URLTA) managed by the Uniform Law Commission. Twenty-five states have adopted URLTA. See Part D (following) for more information on the URLTA.

4. Product Standards:

The federal government is primarily responsible for setting standards for products in commerce that may impact health and safety. These standards reduce the dangers posed by these products by banning their use in housing, requiring safer designs, or specifying label requirements. EPA regulates pesticides and does not allow them to be sold or used with prior approval. The Consumer Product Safety Commission (CPSC) regulates most other consumer products related to housing but requires only compliance with general requirements. In response to specific problems, CPSC adopts specific standards to address the problem such as banning lead containing paint. HUD sets standards for formaldehyde in wood in manufactured housing. The HUD label has been widely used as a voluntary standard beyond manufactured housing. In addition, several national associations including the Underwriters Laboratories (UL), International Standards Organization (ISO), National Fire Protection Association (NFPA), and the American National Standards Institute (ANSI) adopt voluntary industry consensus standards. States and local jurisdictions can set standards only when there are no federal standards or when their actions are consistent with or the same as federal standards. See Part E (following) for more information on these federal product standards.

5. Hazard Management Laws:

The federal, state, and local government set a wide mix of requirements for the management of specific hazards in existing housing. EPA sets standards for asbestos, lead-based paint, and pesticides and has the authority to set standards for radon. HUD sets standards for lead-based paint in federally assisted housing. States and local jurisdictions set standards similar to or more stringent than the federal government. They also act in the absence of federal action such as requiring carbon monoxide alarms, requiring treatment of arsenic-treated lumber, or licensing mold or radon assessors or remediators. See Part F (following) for more information on federal hazard management laws. See Part G (following) for more information on EPA's Renovation, Repair, and Painting Rule.

Table 1
Comparison of Regulatory Approaches to Healthy Homes

	Housing/Property Maintenance Code	Health/Sanitation Code	Landlord-Tenant Law	Product Standards	Hazard Management Law
National Requirements	Yes, for federally assisted housing. No, for other housing.	No.	Lead disclosure and fair housing.	Yes, for specific products and general standards.	Yes, for specific hazards such as lead, asbestos, and pesticides.
State Requirements	Several states.	Several states.	Most states.	Yes, for pesticides. All must be consistent with federal.	Generally yes for specific hazards in addition to federal, such as carbon monoxide and radon.
Local Requirements	Common, except in rural areas.	Common, but limited in scope.	Common in large urban areas.	Uncommon.	Larger community for specific hazards in addition to federal and state.
Current National Models	Yes, International Property Maintenance Code (IPMC).	No.	Yes, Uniform Residential Landlord and Tenant Act (URLTA).	Industry Consensus Standards.	Federal government and some associations issue guidelines to address specific hazards.
For More Information	Part A: Housing Quality Standards Part B: IPMC	Part C: For American Public Health (APHA) Association 1938 Principles	Part D: URLTA	Part E	Part F Part G: EPA's Renovation, Repair, and Painting Rule

A. HUD Housing Quality Standards

I. Overview

The U.S. Department of Housing and Urban Development (HUD) sets standards for housing receiving federal assistance. The primary standards are the Housing Quality Standards (HQS) at 24 CFR 982.401. The HQS were adopted in 1995 and last revised in 1999. All housing funded through HUD's Housing Choice Vouchers (formerly known as Tenant-Based Section 8 Voucher) must comply HQS as a condition of receiving funding. Local public housing authorities conduct initial and annual inspections to ensure compliance with the HQS.¹

The HQS form the basis for HUD's Uniform Physical Condition Standards and its Public Housing Assessment System that applies to public housing and to Project-Based Section 8 Housing (also known as Housing Assistance Payment Program).²

II. HQS's Provisions

(a) Performance and acceptability requirements

- (1) This section states the housing quality standards (HQS) for housing assisted in the programs.
- (2)
 - (i) The HQS consist of:
 - (A) Performance requirements; and
 - (B) Acceptability criteria or HUD approved variations in the acceptability criteria.
 - (ii) This section states performance and acceptability criteria for these key aspects of housing quality:
 - (A) Sanitary facilities;
 - (B) Food preparation and refuse disposal;
 - (C) Space and security;
 - (D) Thermal environment;
 - (E) Illumination and electricity;
 - (F) Structure and materials;
 - (G) Interior air quality;
 - (H) Water supply;
 - (I) Lead-based paint;
 - (J) Access;
 - (K) Site and neighborhood;
 - (L) Sanitary condition; and
 - (M) Smoke detectors.
- (3) All program housing must meet the HQS performance requirements both at commencement of assisted occupancy, and throughout the assisted tenancy.

¹ See www.hud.gov/offices/pih/programs/hcv/about/fact_sheet.cfm for more information on the Housing Choice Voucher program.

² See www.hud.gov/offices/pih/programs/hcv/semmap/semmap.cfm for HUD's Section 8 Management Assessment Program.

- (4)
- (i) In addition to meeting HQS performance requirements, the housing must meet the acceptability criteria stated in this section, unless variations are approved by HUD.
 - (ii) HUD may approve acceptability criteria variations for the following purposes:
 - (A) Variations which apply standards in local housing codes or other codes adopted by the PHA; or
 - (B) Variations because of local climatic or geographic conditions.
 - (iii) Acceptability criteria variations may only be approved by HUD pursuant to paragraph (a)(4)(ii) of this section if such variations either:
 - (A) Meet or exceed the performance requirements; or
 - (B) Significantly expand affordable housing opportunities for families assisted under the program.
 - (iv) HUD will not approve any acceptability criteria variation if HUD believes that such variation is likely to adversely affect the health or safety of participant families, or severely restrict housing choice.

(b) Sanitary facilities

- (1) *Performance requirements.* The dwelling unit must include sanitary facilities located in the unit. The sanitary facilities must be in proper operating condition, and adequate for personal cleanliness and the disposal of human waste. The sanitary facilities must be usable in privacy.
- (2) *Acceptability criteria.*
 - (i) The bathroom must be located in a separate private room and have a flush toilet in proper operating condition.
 - (ii) The dwelling unit must have a fixed basin in proper operating condition, with a sink trap and hot and cold running water.
 - (iii) The dwelling unit must have a shower or a tub in proper operating condition with hot and cold running water.
 - (iv) The facilities must utilize an approvable public or private disposal system (including a locally approvable septic system).

(c) Food preparation and refuse disposal

- (1) *Performance requirement.*
 - (i) The dwelling unit must have suitable space and equipment to store, prepare, and serve foods in a sanitary manner.
 - (ii) There must be adequate facilities and services for the sanitary disposal of food wastes and refuse, including facilities for temporary storage where necessary (e.g, garbage cans).
- (2) *Acceptability criteria.*
 - (i) The dwelling unit must have an oven, and a stove or range, and a refrigerator of appropriate size for the family. All of the equipment must be in proper operating condition. The equipment may be supplied by either the owner or the family. A microwave oven may be substituted for a tenant-supplied oven and stove or range. A microwave oven may be substituted for an owner-supplied oven and stove or range if the tenant agrees and microwave ovens are furnished instead of an oven and stove or range to both subsidized and unsubsidized tenants in the building or premises.

- (ii) The dwelling unit must have a kitchen sink in proper operating condition, with a sink trap and hot and cold running water. The sink must drain into an approvable public or private system.
- (iii) The dwelling unit must have space for the storage, preparation, and serving of food.
- (iv) There must be facilities and services for the sanitary disposal of food waste and refuse, including temporary storage facilities where necessary (e.g., garbage cans).

(d) Space and security

- (1) *Performance requirement.* The dwelling unit must provide adequate space and security for the family.
- (2) *Acceptability criteria.*
 - (i) At a minimum, the dwelling unit must have a living room, a kitchen area, and a bathroom.
 - (ii) The dwelling unit must have at least one bedroom or living/sleeping room for each two persons. Children of opposite sex, other than very young children, may not be required to occupy the same bedroom or living/sleeping room.
 - (iii) Dwelling unit windows that are accessible from the outside, such as basement, first floor, and fire escape windows, must be lockable (such as window units with sash pins or sash locks, and combination windows with latches). Windows that are nailed shut are acceptable only if these windows are not needed for ventilation or as an alternate exit in case of fire.
 - (iv) The exterior doors of the dwelling unit must be lockable. Exterior doors are doors by which someone can enter or exit the dwelling unit.

(e) Thermal environment

- (1) *Performance requirement.* The dwelling unit must have and be capable of maintaining a thermal environment healthy for the human body.
- (2) *Acceptability criteria.*
 - (i) There must be a safe system for heating the dwelling unit (and a safe cooling system, where present). The system must be in proper operating condition. The system must be able to provide adequate heat (and cooling, if applicable), either directly or indirectly, to each room, in order to assure a healthy living environment appropriate to the climate.
 - (ii) The dwelling unit must not contain unvented room heaters that burn gas, oil, or kerosene. Electric heaters are acceptable.

(f) Illumination and electricity

- (1) *Performance requirement.* Each room must have adequate natural or artificial illumination to permit normal indoor activities and to support the health and safety of occupants. The dwelling unit must have sufficient electrical sources so occupants can use essential electrical appliances. The electrical fixtures and wiring must ensure safety from fire.
- (2) *Acceptability criteria.*
 - (i) There must be at least one window in the living room and in each sleeping room.
 - (ii) The kitchen area and the bathroom must have a permanent ceiling or wall light fixture in proper operating condition. The kitchen area must also have at least one electrical outlet in proper operating condition.
 - (iii) The living room and each bedroom must have at least two electrical outlets in proper operating condition. Permanent overhead or wall-mounted light fixtures may count as one of the required electrical outlets.

(g) Structure and materials

- (1) *Performance requirement.* The dwelling unit must be structurally sound. The structure must not present any threat to the health and safety of the occupants and must protect the occupants from the environment.
- (2) *Acceptability criteria.*
 - (i) Ceilings, walls, and floors must not have any serious defects such as severe bulging or leaning, large holes, loose surface materials, severe buckling, missing parts, or other serious damage.
 - (ii) The roof must be structurally sound and weathertight.
 - (iii) The exterior wall structure and surface must not have any serious defects such as serious leaning, buckling, sagging, large holes, or defects that may result in air infiltration or vermin infestation.
 - (iv) The condition and equipment of interior and exterior stairs, halls, porches, walkways, etc., must not present a danger of tripping and falling. For example, broken or missing steps or loose boards are unacceptable.
 - (v) Elevators must be working and safe.

(h) Interior air quality

- (1) *Performance requirement.* The dwelling unit must be free of pollutants in the air at levels that threaten the health of the occupants.
- (2) *Acceptability criteria.*
 - (i) The dwelling unit must be free from dangerous levels of air pollution from carbon monoxide, sewer gas, fuel gas, dust, and other harmful pollutants.
 - (ii) There must be adequate air circulation in the dwelling unit.
 - (iii) Bathroom areas must have one openable window or other adequate exhaust ventilation.
 - (iv) Any room used for sleeping must have at least one window. If the window is designed to be openable, the window must work.

(i) Water supply

- (1) *Performance requirement.* The water supply must be free from contamination.
- (2) *Acceptability criteria.* The dwelling unit must be served by an approvable public or private water supply that is sanitary and free from contamination.

(j) Lead-based paint performance requirement

The Lead-Based Paint Poisoning Prevention Act (42 U.S.C. 4821–4846), the Residential Lead-Based Paint Hazard Reduction Act of 1992 (42 U.S.C. 4851–4856), and implementing regulations at part 35, subparts A, B, M, and R of this title apply to units assisted under this part.

(k) Access performance requirement

The dwelling unit must be able to be used and maintained without unauthorized use of other private properties. The building must provide an alternate means of exit in case of fire (such as fire stairs or egress through windows).

(l) Site and Neighborhood

- (1) *Performance requirement.* The site and neighborhood must be reasonably free from disturbing noises and reverberations and other dangers to the health, safety, and general welfare of the occupants.
- (2) *Acceptability criteria.* The site and neighborhood may not be subject to serious adverse environmental conditions, natural or manmade, such as dangerous walks or steps; instability; flooding, poor drainage, septic tank back-ups or sewage hazards; mudslides; abnormal air pollution, smoke or dust; excessive noise, vibration or vehicular traffic; excessive accumulations of trash; vermin or rodent infestation; or fire hazards.

(m) Sanitary condition—

- (1) *Performance requirement.* The dwelling unit and its equipment must be in sanitary condition.
- (2) *Acceptability criteria.* The dwelling unit and its equipment must be free of vermin and rodent infestation.

(n) Smoke detectors performance requirement—

- (1) Except as provided in paragraph (n)(2) of this section, each dwelling unit must have at least one battery-operated or hard-wired smoke detector, in proper operating condition, on each level of the dwelling unit, including basements but excepting crawl spaces and unfinished attics. Smoke detectors must be installed in accordance with and meet the requirements of the National Fire Protection Association Standard (NFPA) 74 (or its successor standards). If the dwelling unit is occupied by any hearing-impaired person, smoke detectors must have an alarm system, designed for hearing-impaired persons as specified in NFPA 74 (or successor standards).
- (2) For units assisted prior to April 24, 1993, owners who installed battery-operated or hard-wired smoke detectors prior to April 24, 1993 in compliance with HUD's smoke detector requirements, including the regulations published on July 30, 1992, (57 FR 33846), will not be required subsequently to comply with any additional requirements mandated by NFPA 74 (i.e., the owner would not be required to install a smoke detector in a basement not used for living purposes, nor would the owner be required to change the location of the smoke detectors that have already been installed on the other floors of the unit).

B. International Property Maintenance Code

I. Overview

The International Code Council³ (ICC) published the first edition of the *International Property Maintenance Code* in 1998. ICC's three charter members of the International Code Council – Building Officials and Code Administrators International, Inc. (BOCA), International Conference of Building Officials (ICBO) and Southern Building Code Congress International (SBCCI) – developed the IPMC as a comprehensive set of regulations for existing buildings that was consistent with the existing model property maintenance codes at the time.. A new edition is promulgated every three years.

The *International Property Maintenance Code* is founded on principles that the IPMC must:

1. Adequately protect public health, safety and welfare;
2. Not unnecessarily increase construction costs;
3. Not restrict the use of new materials, productions or methods of construction; and
4. Not give preferential treatment to particular types or classes of materials, products or methods of construction.

Adoption

The *International Property Maintenance Code* is available for adoption and use by jurisdictions internationally. Its use within a governmental jurisdiction is intended to be accomplished through adoption by reference. At the time of adoption, jurisdictions should insert the appropriate information in provisions requiring specific local information, such as the name of the adopting jurisdiction. These locations are shown in bracketed words in small capital letters in the code and in the sample ordinance.

To find out whether the *International Property Maintenance Code* or any of the other ICC Codes have been adopted in your community, go to www.iccsafe.org/government/adoption.html.

Maintenance

The *International Property Maintenance Code* is kept up to date through the review of proposed changes submitted by code enforcing officials, industry representatives, design professionals and other interested parties. Proposed changes are carefully considered through an open code development process in which all interested and affected parties may participate. The contents of the code are subject to change both through the Code Development Cycles and the governmental body that enacts the code into law. For more information regarding the code development process, contact the Code and Standard Development Department of the International Code Council.

While the development procedure of the *International Property Maintenance Code* assures the highest degree of care, ICC and the founding members of ICC—BOCA, ICBO, SBCCI—their members and those participating in the development of the code do not accept any liability resulting from compliance or noncompliance with the provisions because ICC and its founding members do not have the power or authority to police or enforce compliance with the contents of the code. Only the governmental body that enacts the code into law has such authority.

³ www.iccsafe.org.

Relationship to Other ICC Codes

The *International Property Maintenance Code* complements and is fully compatible with all the *International Codes* (“I-Codes”) published by the International Code Council (ICC), including the:

1. International Building Code;
2. ICC Electrical Code;
3. International Energy Conservation Code;
4. International Existing Building Code;
5. International Fire Code;
6. International Fuel Gas Code;
7. International Mechanical Code;
8. ICC Performance Code;
9. International Plumbing Code;
10. International Private Sewage Disposal Code;
11. International Residential Code;
12. International Urban-Wildland Interface Code; and
13. International Zoning Code.

All but three other states have adopted one or more of these model codes – most likely the International Building Code.

II. IPMC’s Provisions Related to Healthy Homes

EXTERMINATION. The control and elimination of insects, rats or other pests by eliminating their harborage places; by removing or making inaccessible materials that serve as their food; by poison spraying, fumigating, trapping or by any other approved pest elimination methods.

HABITABLE SPACE. Space in a structure for living, sleeping, eating or cooking. Bathrooms, toilet rooms, closets, halls, storage or utility spaces, and similar areas are not considered habitable spaces.

INFESTATION. The presence, within or contiguous to, a structure or premises of insects, rats, vermin or other pests.

302.1 Sanitation. All exterior property and premises shall be maintained in a clean, safe and sanitary condition. The occupant shall keep that part of the exterior property which such occupant occupies or controls in a clean and sanitary condition.

302.2 Grading and drainage. All premises shall be graded and maintained to prevent the erosion of soil and to prevent the accumulation of stagnant water thereon, or within any structure located thereon.

302.5 Rodent harborage. All structures and exterior property shall be kept free from rodent harborage and infestation. Where rodents are found, they shall be promptly exterminated by approved processes which will not be injurious to human health. After extermination, proper precautions shall be taken to eliminate rodent harborage and prevent reinfestation.

304.2 Protective treatment. All exterior surfaces, including but not limited to, doors, door and window frames, cornices, porches, trim, balconies, decks and fences shall be maintained in good condition. Exterior wood surfaces, other than decay-resistant woods, shall be protected from the elements and decay by painting or other protective covering or treatment. Peeling, flaking and chipped paint shall be eliminated and surfaces repainted. All siding and masonry joints as well as those between the building envelope and the perimeter of windows, doors, and skylights shall be maintained weather resistant and water tight. All metal surfaces subject to rust or corrosion shall be coated to inhibit such rust and corrosion and all surfaces with rust or corrosion shall be stabilized and coated to inhibit future rust and corrosion. Oxidation stains shall be removed from exterior surfaces. Surfaces designed for stabilization by oxidation are exempt from this requirement.

304.5 Foundation walls. All foundation walls shall be maintained plumb and free from open cracks and breaks and shall be kept in such condition so as to prevent the entry of rodents and other pests.

304.6 Exterior walls. All exterior walls shall be free from holes, breaks, and loose or rotting materials; and maintained weatherproof and properly surface coated where required to prevent deterioration.

304.7 Roofs and drainage. The roof and flashing shall be sound, tight and not have defects that admit rain. Roof drainage shall be adequate to prevent dampness or deterioration in the walls or interior portion of the structure. Roof drains, gutters and downspouts shall be maintained in good repair and free from obstructions. Roofwater shall not be discharged in a manner that creates a public nuisance.

304.14 Insect screens. During the period from [DATE] to [DATE], every door, window and other outside opening required for ventilation of habitable rooms, food preparation areas, food service areas or any areas where products to be included or utilized in food for human consumption are processed, manufactured, packaged or stored, shall be supplied with approved tightly fitting screens of not less than 16 mesh per inch (16 mesh per 25 mm) and every swinging door shall have a self-closing device in good working condition.

Exception: Screens shall not be required where other approved means, such as air curtains or insect repellent fans, are employed.

304.17 Guards for basement windows. Every basement window that is openable shall be supplied with rodent shields, storm windows or other approved protection against the entry of rodents.

305.1 General. The interior of a structure and equipment therein shall be maintained in good repair, structurally sound and in a sanitary condition. Occupants shall keep that part of the structure which they occupy or control in a clean and sanitary condition. Every owner of a structure containing a rooming house, housekeeping units, a hotel, a dormitory, two or more dwelling units or two or more nonresidential occupancies, shall maintain, in a clean and sanitary condition, the shared or public areas of the structure and exterior property.

305.3 Interior surfaces. All interior surfaces, including windows and doors, shall be maintained in good, clean and sanitary condition. Peeling, chipping, flaking or abraded paint shall be repaired, removed or covered. Cracked or loose plaster, decayed wood and other defective surface conditions shall be corrected.

307.1 Accumulation of rubbish or garbage. All exterior property and premises, and the interior of every structure, shall be free from any accumulation of rubbish or garbage.

308.1 Infestation. All structures shall be kept free from insect and rodent infestation. All structures in which insects or rodents are found shall be promptly exterminated by approved processes that will not be injurious to human health. After extermination, proper precautions shall be taken to prevent reinfestation.

308.2 Owner. The owner of any structure shall be responsible for extermination within the structure prior to renting or leasing the structure.

308.3 Single occupant. The occupant of a one-family dwelling or of a single-tenant nonresidential structure shall be responsible for extermination on the premises.

308.4 Multiple occupancy. The owner of a structure containing two or more dwelling units, a multiple occupancy, a rooming house or a nonresidential structure shall be responsible for extermination in the public or shared areas of the structure and exterior property. If infestation is caused by failure of an occupant to prevent such infestation in the area occupied, the occupant shall be responsible for extermination.

308.5 Occupant. The occupant of any structure shall be responsible for the continued rodent and pest-free condition of the structure.

Exception: Where the infestations are caused by defects in the structure, the owner shall be responsible for extermination.

403.1 Habitable spaces. Every habitable space shall have at least one openable window. The total openable area of the window in every room shall be equal to at least 45 percent of the minimum glazed area required in Section 402.1.

Exception: Where rooms and spaces without openings to the outdoors are ventilated through an adjoining room, the unobstructed opening to the adjoining room shall be at least 8 percent of the floor area of the interior room or space, but not less than 25 square feet (2.33m²). The ventilation openings to the outdoors shall be based on a total floor area being ventilated.

403.2 Bathrooms and toilet rooms. Every bathroom and toilet room shall comply with the ventilation requirements for habitable spaces as required by Section 403.1, except that a window shall not be required in such spaces equipped with a mechanical ventilation system. Air exhausted by a mechanical ventilation system from a bathroom or toilet room shall discharge to the outdoors and shall not be recirculated.

403.4 Process ventilation. Where injurious, toxic, irritating or noxious fumes, gases, dusts or mists are generated, a local exhaust ventilation system shall be provided to remove the contaminating agent at the source. Air shall be exhausted to the exterior and not be recirculated to any space.

403.5 Clothes dryer exhaust. Clothes dryer exhaust systems shall be independent of all other systems and shall be exhausted in accordance with the manufacturer's instructions.

503.4 Floor surface. In other than dwelling units, every toilet room floor shall be maintained to be a smooth, hard, nonabsorbent surface to permit such floor to be easily kept in a clean and sanitary condition.

505.4 Water heating facilities. Water heating facilities shall be properly installed, maintained and capable of providing an adequate amount of water to be drawn at every required sink, lavatory, bathtub, shower and laundry facility at a temperature of not less than 110°F (43°C). A gas-burning water heater shall not be located in any bathroom, toilet room, bedroom or other occupied room normally kept closed, unless adequate combustion air is provided. An approved combination temperature and pressure-relief valve and relief valve discharge pipe shall be properly installed and maintained on water heaters.

602.2 Residential occupancies. Dwellings shall be provided with heating facilities capable of maintaining a room temperature of 68°F (20°C) in all habitable rooms, bathrooms and toilet rooms based on the winter outdoor design temperature for the locality indicated in Appendix D of the *International Plumbing Code*. Cooking appliances shall not be used to provide space heating to meet the requirements of this section.

Exception: In areas where the average monthly temperature is above 30°F (-1°C), a minimum temperature of 65°F (18°C) shall be maintained.

602.3 Heat supply. Every owner and operator of any building who rents, leases or lets one or more dwelling unit, rooming unit, dormitory or guestroom on terms, either expressed or implied, to furnish heat to the occupants thereof shall supply heat during the period from [DATE] to [DATE] to maintain a temperature of not less than 68°F (20°C) in all habitable rooms, bathrooms, and toilet rooms.

Exceptions:

1. When the outdoor temperature is below the winter outdoor design temperature for the locality, maintenance of the minimum room temperature shall not be required provided that the heating system is operating at its full design capacity. The winter outdoor design temperature for the locality shall be as indicated in Appendix D of the *International Plumbing Code*.
2. In areas where the average monthly temperature is above 30°F (-1°C) a minimum temperature of 65°F (18°C) shall be maintained.

603.2 Removal of combustion products. All fuel-burning equipment and appliances shall be connected to an approved chimney or vent.

Exception: Fuel-burning equipment and appliances which are labeled for unvented operation.

603.5 Combustion air. A supply of air for complete combustion of the fuel and for ventilation of the space containing the fuel-burning equipment shall be provided for the fuel-burning equipment.

603.6 Energy conservation devices. Devices intended to reduce fuel consumption by attachment to a fuel-burning appliance, to the fuel supply line thereto, or to the vent outlet or vent piping therefrom, shall not be installed unless labeled for such purpose and the installation is specifically approved.

607.1 General. Duct systems shall be maintained free of obstructions and shall be capable of performing the required function.

C. APHA’s Basic Principles of Healthful Housing

I. Overview

In 1938, the American Public Health Association⁴ (APHA) formulated Basic Principles of Healthful Housing (Principles),⁵ to promote the “physical, mental and social health” essential in housing. For each of the 30 Principles, APHA also identified Specific Requirements, and the Methods of Attainment considered at that time to be the “more important means” by which to achieve the Principle’s objectives.

II. How The Principles Have Been Applied

The Principles continue to inform the dialogue about, and development of policies to promote, healthy housing. For example, U.S. federal agencies endorse the Principles in the *Healthy Housing Reference Manual (HH Manual)*.⁶ The CDC also modeled its original basic housing inspection manual after the Principles. In the U.K., the University of Warwick used the Principles as a foundational document in the development of the Health and Housing Rating System, the nation’s housing inspection system. The Principles comport with modern tenets of healthy housing, *i.e.*: keep housing dry, clean, ventilated, and pest free; avoid contaminants; and properly maintain housing.

III. APHA’s Principles

The 30 Principles fall into four categories:

- a. **Fundamental Physiological Needs** (e.g., for illumination, heat, cooling, space, chemical purity, quiet);
- b. **Fundamental Psychological Needs** (e.g., for privacy, adequate space, cleanliness, peace-of-mind, normal family and household activity);
- c. **Protection Against Contagion** (e.g., from disease, vermin, sewage, contaminated water, over-crowding, food decay); and
- d. **Protection Against Accidents** (e.g., from falls, fire, burns, gas, mechanical injuries, electrical shock, building collapse, traffic).

The Principles are summarized below, along with analysis excerpted from the *HH Manual*. The number of each Principle as identified in APHA’s 1938 report is indicated by “P#.”

⁴ www.apha.org.

⁵ APHA, Committee on the Hygiene of Housing, *Basic Principles of Healthful Housing*, (Preliminary Report, March 1938). www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1529239 or www.ajph.org/cgi/reprint/28/3/351

⁶ The manual is published by the U.S. Department of Health and Human Services and U.S. Department of Housing and Urban Development. www.cdc.gov/nceh/publications/books/housing/cha02.htm

Fundamental Physiological Needs (8 Principles⁷)

1. A thermal environment to *avoid undue* heat loss (P1) -- and *permit adequate* heat loss (P2).

The lack of adequate heating and cooling systems in homes can contribute to respiratory illnesses or even lead to death from extreme temperatures. . . . [A] majority of today's homes [can] maintain healthy temperatures, although many houses still lack adequate insulation.

2. An atmosphere of "reasonable chemical purity" (P3).
3. Provision of:
 - a. adequate *daylight* illumination and avoidance of undue daylight glare (P4);
 - b. direct sunlight (P5); and
 - c. adequate *artificial* illumination and avoidance of glare (P6).

Research has revealed a strong relationship between light and human physiology. . . . one of the physiologic responses . . . is the production of vitamin D. . . . It affects body rhythms and psychologic health. . . . Adequate lighting is important . . . to see unsanitary conditions and to prevent injury . . . Improper indoor lighting can also contribute to eyestrain

4. Protection against excessive noise (P7).

Noise has physiologic impacts aside from the potential to reduce hearing ability. . . . elevated blood pressure; negative cardiovascular effects; increased breathing rates, digestion, and stomach disturbances; ulcers; negative effects on developing fetuses; difficulty sleeping after the noise stops; plus the intensification of the effects of drugs, alcohol, aging, and carbon monoxide. . . . [and cause other adverse effects].

5. Provision of adequate space for exercise and for the play of children (P8).

Healthful housing should include the provision of safe play and exercise areas. Many American neighborhoods are severely deficient, with no area for children to safely play. . . . [no] sidewalks or street lighting, nor are essential services available by foot

Fundamental Psychological Needs (7 Principles)

6. Provision of:
 - a. adequate privacy for the individual (P9);
 - b. opportunities for normal family life (P10) – and normal community life (P11);
 - c. facilities to make performing household tasks possible without undue physical and mental fatigue (P12);
 - d. facilities for "the maintenance of cleanliness of the dwelling and the person" (P13); and
 - e. "possibilities for reasonable esthetic satisfaction in the home and its surroundings" (P14).
7. "Concordance with prevailing social standards of the local community" (P15).

⁷ The *HH Manual* adds a new Principle #1, "protection from the elements"; and does not discuss APHA Principle #3, "reasonable chemical purity."

Privacy is a necessity to most people Ideally, everyone would have their own rooms excepting married couples and small children. . . . Bedrooms and bathrooms should be accessible directly from halls or living rooms crowding can lead to poor school performance in children.”

A wholesome atmosphere requires adequate living room space and adequate space for withdrawal. . . . This includes easy communication with centers of culture and business”

Protection Against Contagion (8 Principles)

8. Provision of:

- a. A safe and sanitary water supply (P16);
- b. protection of the water supply system against pollution (P17); and
- c. toilet facilities that minimize the danger of transmitting disease (P18).

[Approximately] 42 million Americans (mostly in rural America) get their water from private wells or other small, unregulated water systems. The presence of adequate water, sewer, and plumbing facilities is central to the prevention, reduction, and possible elimination of water-related diseases. . . . Water-related diseases can be organized into four categories:

- *Waterborne* diseases [*i.e.*, those caused by contamination from chemical, human, and animal wastes, such as cholera, typhoid, shigella, polio, meningitis, and hepatitis A and E].
- *Water-based* diseases [*i.e.*, from aquatic organisms that become parasites. These are rare in the U.S.]
- *Water-related vector* diseases [*i.e.*, those linked to vectors that breed and live in/near water; primarily mosquitoes that carry malaria, yellow fever, *etc.* The West Nile virus is a vectorborne disease. In the U.S. in 2003, there were 9,862 human cases of West Nile virus, with 264 deaths.]
- *Water-scarce* diseases [*i.e.*, diseases that flourish where sanitation is poor due to a scarcity of fresh water, including diphtheria, leprosy, tuberculosis. These conditions are essentially absent from the U.S.]

9. Protection against sewage contamination of interior surfaces (P19) – and avoidance of unsanitary conditions near the dwelling (P20).

In 2000 . . . 1.4% of U.S. homes lacked plumbing facilities. . . . The containment of household sewage is instrumental in protecting the public from waterborne and vectorborne diseases. . . .

Nationally, 74.8% of homes are served by a public sewer, with 24.1% served by a septic tank or cesspool, and the remaining 1.1% using other means.”

10. Exclusion of vermin which may play a part in the transmission of disease (P21).

Vermin, such as rodents, have long been linked to property destruction and disease. Integrated pest management, along with proper housing construction, has played a significant role in reducing vermin around the modern home. Proper food storage, rat-proofing construction, and ensuring good sanitation outside the home have served to eliminate or reduce rodent problems in the 21st century home.

11. Provision of facilities for keeping milk and food fresh (“undecomposed”)(P22).

Facilities to properly store milk and food [has] been instrumental in reducing . . . foodborne diseases

12. Provision of sufficient space in sleeping rooms to minimize the danger of infection (P23).

Much improvement has been made in the adequacy of living space for the U.S. family over the last 30 years. . . . Excessive crowding in homes has the potential to increase. . . communicable disease transmission [and] the stress level of occupants

Protection Against Accidents (7 Principles)⁸

13. Erection of the dwelling with materials and methods to minimize danger of accidents due to collapse of any part of the structure (P24).

14. Control of conditions likely to *cause* fires or promote their spread (P25).

Between 1992 and 2001, an average of 4,266 Americans died annually in fires and nearly 25,000 were injured. . . . The [US] has one of the highest fire death rates in the industrialized world, with 13.4 deaths per million people. At least 80% of all fire deaths occur in residences. . . . Apartment fires most often start in the kitchen

Cooking is the leading cause of home fires, usually a result of unattended cooking and human error rather than mechanical failure of the cooking units. The leading cause of fire deaths in homes is careless smoking, which can be significantly deterred by smoke alarms and smolder-resistant bedding and upholstered furniture. . . .

Manufactured homes can be susceptible to fires. More than one-fifth of residential fires in these facilities are related to the use of supplemental room heaters, such as wood- and coal-burning stoves, kerosene heaters, gas space-heaters, and electrical heaters. Most fires related to supplemental heating equipment “result from improper installation, maintenance, or use of the appliance.”

15. Provision of adequate facilities for *escape* in the case of fire (P26).

Three key elements can contribute to a safe exit from a home during the threat of fire. The first . . . is a working smoke alarm system. . . . By 1995, 93% of all single-family and multifamily homes, apartments, nursing homes, and dormitories were equipped with alarms. . . .

A second element . . . is a properly installed fire-suppression system. . . . Currently, few homes are protected by residential sprinkler systems. . . . Sprinkler systems can be installed for a reasonable price. These systems can be retrofitted to existing construction . . .

The final element in escaping from a residential fire is having a fire [escape] plan.”

⁸ The *HH Manual* does not discuss Principle # 24, dwelling construction, or # 30, traffic.

16. Protection against danger of electrical shocks and burns (P27).

Electrical distribution equipment was the third-leading cause of home fires and the second-leading cause of fire deaths in the [U.S.] between 1994 and 1998. . . . 38,300 home electrical fires occurred in 1998, which resulted in 284 deaths, [and] 1,184 injuries

Electrical fires are one of the leading types of home fires in manufactured homes. . . . [M]any electrical fires in homes are associated with improper installation of electrical devices by do-it-yourselfers.”

17. Protection against gas poisonings (P28).

In 2001 an estimated 130 deaths occurred as a result of CO poisoning from residential sources; this decrease in deaths [down from about 600 in 1998] is related to the increased use of CO detectors. In addition, approximately 10,000 cases of CO-related injuries occur each year.

18. Protection against falls and other mechanical injuries in the home (P29).

The leading causes of home injury deaths in 1998 were falls and poisonings, which accounted for 6,756 and 5,758 deaths, respectively. . . . Overall, falls were the leading cause of nonfatal, unintentional injuries occurring at home and accounted for 5.6 million injuries. . . . 48% of households have windows on the second floor or above, but only 25% have window locks or bars to prevent children from falling out. . . .

19. Protection of the neighborhood against automobile traffic hazards (P30).

D. Uniform Residential Landlord and Tenant Act

I. Overview

The Uniform Residential Landlord and Tenant Act (URLTA) was completed by the Uniform Law Commission (ULC) in 1972.⁹

The ULC Drafting Process

A “uniform” state law is one in which uniformity of the provisions of the act among the various jurisdictions is a principal and compelling objective. To draft an act, ULC appoints a drafting committee from among the ULC membership (attorneys from diverse practice areas). Each draft receives at least two years consideration. The drafting process draws on the expertise of state-appointed commissioners, legal experts, and advisors and observers representing the views of other legal organizations or interests that will be subject to the proposed laws.

Draft acts are submitted for initial debate of the entire ULC at an annual meeting. Each act must be considered section-by-section, at no less than two annual meetings, by all commissioners. Once approved, the final step is a vote by states. A majority of the states present, and no less than 20 states, must approve an act before it can be officially adopted.¹⁰

URLTA

URLTA establishes the landlord and tenant relationship on the basis of contract (rather than property law) and, thus, gives the parties contractual rights and remedies. As of 2012, URLTA has been adopted by 25 states¹¹:

Alabama	Iowa	Ohio
Alaska	Kansas	Oklahoma
Arizona	Kentucky	Oregon
Arkansas	Mississippi	Rhode Island
Connecticut	Montana	South Carolina
Delaware	Nebraska	Tennessee
Hawaii	New Mexico	Virginia
Indiana	North Carolina	Washington
		West Virginia

⁹ See National Conference of Commissioners on Uniform State Laws (NCCUSL) at www.nccusl.org/Update/. NCCUSL’s electronic archives is maintained by the University of Pennsylvania Law School at www.law.upenn.edu/bll/archives/ulc/ulc_final.htm#final.

¹⁰ See www.nccusl.org/Update/DesktopDefault.aspx?tabindex=5&tabid=61.

¹¹ See <http://www.ncsl.org/documents/Environ/STUniformLandlord-tenantActs.pdf>

II. URLTA's Property Maintenance Obligations

URLTA is intended to “encourage landlords and tenants to maintain and improve the quality of housing,” and clarify the “rights and obligations of landlords and tenants.” URLTA § 1.102.

Landlord Obligations

Generally, URLTA requires that a landlord:

- comply with applicable building and housing codes affecting health and safety;
- “make all repairs and do whatever is necessary to put and keep the premises in a fit and habitable condition”;
- keep all common areas in a clean and safe condition;
- maintain electrical, plumbing, sanitary, heating, ventilating, air-conditioning, and other facilities and appliances in “good and safe working order and condition”;
- provide and maintain appropriate receptacles for removal of garbage and other waste, and arrange for their removal; and
- supply running water and reasonable amounts of hot water at all times and reasonable heat (between October 1 and May 1), except where the law does not require the building be so equipped, or heat or hot water is generated by an installation controlled by the tenant.

Under certain circumstances, a landlord and tenant may agree to have the tenant perform repairs and maintenance. URLTA § 2.104.

URLTA prohibits rental agreements that allow landlords to receive rent free of the obligation to comply with the code's maintenance obligations. URLTA § 1.404; § 2.104(a).

Tenant Obligations

Also, URLTA requires that a tenant:

- comply with all obligations primarily imposed upon tenants by applicable building and housing codes;
- keep the tenant's premises “as clean and safe as the condition of the premises permit”;
- dispose of garbage, rubbish and other wastes from the dwelling unit “in a clean and safe manner”;
- keep plumbing fixtures in the tenant's dwelling unit “as clear as their condition permits”; and
- use “in a reasonable manner” all electrical, plumbing, sanitary, heating, ventilating, air-conditioning, and other facilities and appliances. URLTA § 3.101.

III. URLTA Provisions Related to Property Maintenance¹²

§ 1.102. [Purposes; Rules of Construction]

- (a) This Act shall be liberally construed and applied to promote its underlying purposes and policies.
- (b) Underlying purposes and policies of this Act are
 - (1) to simplify, clarify, modernize, and revise the law governing the rental of dwelling units and the rights and obligations of landlords and tenants;
 - (2) to encourage landlords and tenants to maintain and improve the quality of housing; and
 - (3) to make uniform the law with respect to the subject of this Act among those states which enact it.

§ 1.404. [Separation of Rents and Obligations to Maintain Property Forbidden]

A rental agreement, assignment, conveyance, trust deed, or security instrument may not permit the receipt of rent free of the obligation to comply with Section 2.104(a).

§ 2.104. [Landlord to Maintain Premises]

- (a) A landlord shall:
 - (1) Comply with the requirements of applicable building and housing codes materially affecting health and safety;
 - (2) Make all repairs and do whatever is necessary to put and keep the premises in a fit and habitable condition;
 - (3) Keep all common areas of the premises in a clean and safe condition;
 - (4) Maintain in good and safe working order and condition all electrical, plumbing, sanitary, heating, ventilating, air-conditioning, and other facilities and appliances, including elevators, supplied or required to be supplied by him;
 - (5) Provide and maintain appropriate receptacles and conveniences for the removal of ashes, garbage, rubbish, and other waste incidental to the occupancy of the dwelling unit and arrange for their removal; and
 - (6) Supply running water and reasonable amounts of hot water at all times and reasonable heat [between [October 1] and [May 1]] except where the building that includes the dwelling unit is not required by law to be equipped for that purpose, or the dwelling unit is so constructed that heat or hot water is generated by an installation within the exclusive control of the tenant and supplied by a direct public utility connection.
- (b) If the duty imposed by paragraph (1) of subsection (a) is greater than any duty imposed by any other paragraph of that subsection, the landlord's duty shall be determined by reference to paragraph (1) of subsection (a).
- (c) The landlord and tenant of a single family residence may agree in writing that the tenant perform the landlord's duties specified in paragraphs (5) and (6) of subsection (a) and also specified repairs, maintenance tasks, alterations, and remodeling, but only if the transaction is entered into in good faith.
- (d) The landlord and tenant of any dwelling unit other than a single family residence may agree that the tenant is to perform specified repairs, maintenance tasks, alterations, or remodeling only if

¹² See www.law.upenn.edu/bll/archives/ulc/fnact99/1970s/urlta72.htm or www.law.upenn.edu/bll/archives/ulc/ulc_final.htm#final.

- (1) The agreement of the parties is entered into in good faith and is set forth in a separate writing signed by the parties and supported by adequate consideration;
 - (2) The work is not necessary to cure noncompliance with subsection (a)(1) of this section; and
 - (3) The agreement does not diminish or affect the obligation of the landlord to other tenants in the premises.
- (e) The landlord may not treat performance of the separate agreement described in subsection (d) as a condition to any obligation or performance of any rental agreement.

§ 3.101. [Tenant to Maintain Dwelling Unit]

A tenant shall:

- (1) Comply with all obligations primarily imposed upon tenants by applicable provisions of building and housing codes materially affecting health and safety;
- (2) Keep that part of the premises that he occupies and uses as clean and safe as the condition of the premises permit;
- (3) Dispose from his dwelling unit all ashes, garbage, rubbish, and other waste in a clean and safe manner;
- (4) Keep all plumbing fixtures in the dwelling unit or used by the tenant as clear as their condition permits;
- (5) Use in a reasonable manner all electrical, plumbing, sanitary, heating, ventilating, air-conditioning, and other facilities and appliances including elevators in the premises;
- (6) Not deliberately or negligently destroy, deface, damage, impair, or remove any part of the premises or knowingly permit any person to do so; and
- (7) Conduct himself and require other persons on the premises with his consent to conduct themselves in a manner that will not disturb his neighbors' peaceful enjoyment of the premises.

E. Product Standards

I. Overview

The federal government is primarily responsible for setting standards for products in commerce that may impact health and safety. These standards reduce the dangers posed by these products by banning their use in housing, requiring safer designs, or specifying label requirements.

EPA regulates pesticides and does not allow them to be sold or used with prior approval. The Consumer Product Safety Commission (CPSC) regulates most other consumer products related to housing but requires only compliance with general requirements. In response to specific problems, CPSC adopts specific standards to address the problem such as banning lead containing paint. HUD sets standards for formaldehyde in wood in manufactured housing. The HUD label has been widely used as a voluntary standard beyond manufactured housing.

II. EPA Pesticide Registration

The U.S. Environmental Protection Agency sets product standards for pesticides.¹³ A pesticide is broadly defined as any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest. Pests are living organisms that occur where they are not wanted or that cause damage to crops or humans or other animals. Therefore, a pesticide includes herbicides, insecticides, and fungicides. Products which contain certain low-risk ingredients, such as garlic and mint oil, have been exempted from Federal registration requirements, although State regulatory requirements may still apply.

No pesticide can be sold without first being registered by EPA pursuant to the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). For a pesticide to be registered, EPA must affirmatively determine that the product does not pose an unreasonable risk to human health and the environment when used consistent with the label. The label becomes the law that must be followed when used the pesticide. Anyone, even a consumer, who does not follow the product label are violating the law.

Through the registration process, EPA can restrict the sale or use of a pesticide including its use in housing. It can require that only licensed pest control operators use the pesticides by classifying it as a “restricted use” pesticide. During the past few years, EPA has removed once common pesticides such as chlorpyrifos¹⁴ and diazinon¹⁵ from consumer use and restricted access to the products.

In May 2008, EPA took the unusual step of limiting the use and sale of rodenticides because of pervasive misuse.¹⁶ More than 3000 children required treatment for accidental exposure to a type of rodenticide that acts as an anticoagulant in mammals. These second generation anticoagulants kill rodents with just one feeding and persist in body tissues. EPA required that all rodenticide bait products be sold to consumers only in tamper resistant bait stations. Loose bait such as pellets would be prohibited.

¹³ See www.epa.gov/pesticides.

¹⁴ See www.epa.gov/pesticides/reregistration/REDS/factsheets/chlorpyrifos_fs.htm

¹⁵ See www.epa.gov/pesticides/reregistration/diazinon/

¹⁶ See www.epa.gov/opp00001/reregistration/rodenticides/

See www.epa.gov/pesticides for more information.

III. CPSC Hazardous Substances Laws

The Consumer Product Safety Commission sets product standards pursuant to the Consumer Product Safety Act and the Federal Hazardous Substance Act.¹⁷ The CPSC has adopted mandatory products standards for the following items related to housing, furniture, and appliances:

- [Safety standard for walk-behind power lawn mowers](#): 16 CFR Part 1205
- [Safety standard for swimming pool slides](#): 16 CFR Part 1207
- [Safety standard for automatic residential garage door operators](#): 16 CFR Part 1211
- [Safety standard for entrapment hazards in bunk beds](#): 16 CFR Part 1213
- [Ban of unstable refuse bins](#): 16 CFR Part 1301
- [Ban of extremely flammable contact adhesives](#): 16 CFR Part 1302
- [Ban of lead-containing paint and certain consumer products bearing lead-containing paint](#): 16 CFR Part 1303
- [Ban of consumer patching compounds containing respirable free-form asbestos](#): 16 CFR Part 1304
- [Ban of artificial emberizing materials \(ash and embers\) containing respirable free-form asbestos](#): 16 CFR Part 1305
- [Self pressurized consumer products containing chlorofluorocarbons](#): 16 CFR Part 1401
- [CB base station antennas, TV antennas, and supporting structures](#): 16 CFR Part 1402
- [Cellulose insulation](#): 16 CFR Part 1404
- [Coal and wood burning appliances--notification of performance and technical data](#): 16 CFR Part 1406
- [Requirements for full-size baby cribs](#): 16 CFR Part 1508
- [Requirements for non-full-size baby cribs](#): 16 CFR Part 1509
- [Requirements for bunk beds](#): 16 CFR Part 1513
- [Standard for the flammability of vinyl plastic film](#) 16 CFR Part 1611
- [Standard for the surface flammability of carpets and rugs \(FF 1-70\)](#) 16 CFR Part 1631
- [Standard for the surface flammability of small carpets and rugs \(FF 2-70\)](#) 16 CFR Part 1631
- [Standard for the flammability of mattresses and mattress pads \(FF 4-72, amended\)](#) 16 CFR Part 1632
- [Standard for the flammability \(open flame\) of mattress sets \(Eff. 7-1-07\)](#) 16 CFR Part 1633
- [Standard for devices to permit the opening of household refrigerator doors from the inside](#) 16 CFR Part 1750

For a complete list sorted by product, go to www.cpsc.gov/businfo/reg1.html.

It also requires labeling of products and bans products containing hazardous substances if they could injure a child.

See www.cpsc.gov for more information.

¹⁷ See www.cpsc.gov.

F. Hazard Management Laws

The U.S. Environmental Protection Agency (EPA) has promulgated regulations to govern asbestos, lead-based paint (LBP), and pesticide use (as well as manufacture and sale). EPA also possesses, but has not exercised, rulemaking authority for radon.

I. Asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP)¹⁸

The asbestos NESHAP¹⁹ applies to residential buildings with more than four dwelling units (and to other buildings), and imposes requirements for handling Regulated Asbestos-Containing Material (RACM) during demolition and renovation projects. RACM includes *friable* asbestos material; and *non-friable* material that has, or likely will become, friable (*e.g.*, will be subject to sanding or grinding, or likely will be crumbled or pulverized).

The NESHAP requires that:

- Prior to demolition or renovation, a certified inspector must inspect all affected areas; and EPA must be notified ten (10) days prior to the start of work for:
 - any “demolition” (*i.e.*, removal of load bearing member or structure), *even if asbestos may not be present*, and
 - any “renovation” that involves removal or disturbance of >260 linear feet or 160 ft² of RACM.
- Certified workers remove all RACM, a certified supervisor be present, and required work practices be followed (*e.g.*, wet methods, and no visible emissions).
- The collection, transport, and disposal of waste comport with regulatory requirements.

II. Lead-based Paint (LBP)

The federal government has several legal authorities pertaining to LBP and LBP hazards:

- The Disclosure Rule^{20,21};
- The Lead Safe Housing Rule (LSH Rule)²²;
- The Toxic Substances Control Act (TSCA), and regulations thereunder:
 - The Pre-renovation Education Rule (PRE Rule);
 - The Renovation, Repair and Painting Rule (RRP Rule) (issued by EPA on April 22, 2008 and fully effective on April 22, 2010); and
 - The Lead-based Paint Activities, Certification and Training Rule (LBP Activities Rule);²³ and
- The Resource Conservation and Recovery Act (RCRA) Section 7003.²⁴

¹⁸ NESHAP Fact Sheet for Renovation and Demolition Projects.

<http://yosemite.epa.gov/R10/OWCM.NSF/webpage/Asbestos+in+Demolition+and+Renovation>.

¹⁹ 40 C.F.R. Part 61, Subpart M.

²⁰ 24 C.F.R. Part 35, Subpart A (HUD) and 40 C.F.R. Part 745, Subpart F (EPA).

²¹ 42 U.S.C. §§ 4851-4853a (known also as the Residential Lead-based Paint Hazard Reduction Act of 1992).

²² 24 C.F.R. Part 35, Subparts B-R. The U.S. Department of Housing and Urban Development (HUD) administers and enforces the LSH Rule.

²³ 15 U.S.C. §§ 2601-2692; 40 C.F.R. Part 745, Subparts E and L.

²⁴ 42 U.S.C. § 6973.

Generally, these laws establish disclosure obligations, and performance standards for activities that disturb LBP – but do *not* impose an affirmative obligation to perform LBP risk reduction work and do *not* empower federal authorities to demand such work. There are two exceptions:

- The LSH Rule applies to federally owned or assisted pre-1978 housing (approximately 3 percent of pre-1978 housing). The rule requires disclosure, and various evaluation and risk reduction measures based upon the classification of the housing, as determined by the level of federal assistance, age of housing, ownership, and other factors.
- RCRA Section 7003 empowers EPA to order a responsible person to take action “as may be necessary” to protect human health and the environment when a “solid waste,” including a LBP hazard, presents an “imminent and substantial endangerment.”

See Part G for more information on EPA’s Renovation, Repair and Painting Rule.

III. Pesticide Use

Integrated Pest Management (IPM)²⁵

EPA promotes the use of IPM in residential settings, through outreach and education, and its Pesticide Environmental Stewardship Program (PESP).²⁶

IPM is a *series* of pest management evaluations, decisions and controls, generally using a four-tiered approach in the following sequence:

- Set Action Thresholds, *i.e.*, decide the point at which pest populations or environmental conditions indicate that pest control action is required;
- Monitor and Identify Pests, *i.e.*, ensure that pesticides are really needed, and that the correct pesticide will be used;
- Prevention, *i.e.*, manage the indoor space to prevent pests from becoming a threat; and
- Control, *i.e.*, use less risky pest controls first (*e.g.*, highly targeted chemicals, such as pheromones) or mechanical control (*e.g.*, trapping); use additional methods if necessary (*e.g.*, targeted spraying); use broadcast spraying of non-specific pesticides as a last resort.

Pesticide Labeling²⁷

Pesticide labels constitute the law concerning the proper use of a pesticide. Failure to use a pesticide by a professional or by a consumer in accordance with the label requirements and prohibitions is a violation of the law and may be grounds for an enforcement action. To promote proper pesticide use by consumers, EPA employs outreach and education, and voluntary programs.²⁸

The “Directions for Use” section of a label reflects EPA’s “determination that the use of the product in such a manner does not cause unreasonable adverse effects on the environment.” (Other sections explain the ingredients, effects, and other facts.) Generally, the Directions for Use section states the:

- Pest(s) the product may be used to control,
- Sites where the product may be used;

²⁵ *Integrated Pest Management (IPM) Principles*. www.epa.gov/pesticides/factsheets/ipm.htm

²⁶ See www.epa.gov/pesp.

²⁷ See *Label Review Manual*, Directions for Use. www.epa.gov/oppfead1/labeling/lrm/chap-11.htm

²⁸ See *e.g.*, *Read the Label First* and *Consumer Labeling Initiative*. www.epa.gov/pesticides/label/index.html.

- Required or preferred application methods, and prohibited methods;
- Proper application of the pesticide and the rate of application;
- Restrictions on use for factors such as weather, season, contamination of sensitive areas;
- Limits on how often the pesticide should or may be applied;
- Maximum applicable rates; and
- Any other requirements as necessary

IV. **Radon**²⁹

The 1988 Indoor Radon Abatement Act (IRAA)³⁰ established the national goal that air within buildings in the U.S. “should be as free of radon as the ambient air outside.” IRAA does not explicitly *require* EPA to promulgate regulations, but Section 310 *authorizes* EPA to issue “regulations as may be necessary” to carry out the statute. IRAA also authorizes EPA to provide grants to states to support testing and reducing radon in homes.

EPA relies on voluntary programs to promote radon awareness, testing, and reduction. The program sets an “Action Level” of 4 picocuries per liter (pCi/l) of air for indoor radon. This level “is *not* the maximum safe level for radon in the home” but, rather, is the point at which EPA has deemed the cost to the homeowner to fix the problem is warranted by the risk. EPA works with homeowners, home builders, building code organizations, and others to promote awareness, make new homes more radon resistant, and encourage radon testing when existing homes are sold.

In June 2008, EPA’s Inspector General (IG) announced that radon exposure has increased since 1988, and that EPA’s voluntary program has not achieved the IRAA’s national goal.³¹ The IG recommended that EPA:

- “Develop a strategy” for achieving IRAA’s goal using the rulemaking authority of section 310 – or “explain its alternative strategy”;
- “Identify limitations” in its statutory authority, and report these to Congress;
- Provide “metrics that will better measure the magnitude of the potential radon problem in relation to the number of homes at risk”; and
- Revise how EPA reports Indoor Radon Program results in its accountability reports.

²⁹ Source: www.epa.gov/radiation/radionuclides/radon.html#epadoing

³⁰ Title III of the Toxic Substances Control Act, 15 U.S.C. §§ 2661-2671.

³¹ EPA Office of the Inspector General, *More Action Needed to Protect Public from Indoor Radon Risks*. www.epa.gov/oig/

G. EPA's New Renovation, Repair, and Painting Rule

When is Compliance with the EPA Renovation, Repair, and Painting Rule Required?

Scope of Rule: Renovation, repair, and painting activities on *target housing* or any *child-occupied facility* built before 1978 performed for compensation after April 22, 2010. *Renovation* is any modification of any existing structure or portion of an existing structure that results in disturbance of painted surfaces.

- **Target Housing:** Housing constructed prior to 1978, except:
 - Housing for the elderly or persons with disabilities (unless one or more children less than six years of age resides, spends significant amount of time, or is expected to reside in such housing for the elderly or persons with disabilities); or
 - Any zero-bedroom dwelling.
- **Child-Occupied Facility:** Building, or portion of a building, constructed prior to 1978, visited regularly by the same child, under six years of age, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least three hours and the combined weekly visits last at least six hours; and that the combined annual visits last at least 60 hours. It also encompasses:
 - Only those common areas that are routinely used by children under age 6, such as restrooms and cafeterias, not simply passed through.
 - Exteriors sides of the building immediately adjacent to the child-occupied facility or the common areas routinely used by children under age six.

Activities that are exempt from compliance with the requirements:

- **Abatement:** Activities conducted under abatement rules by certified abatement contractor. Abatement involves work where the *primary intent* of the job is to remove lead hazards.
- **Minor Repair or Maintenance Activities:** Activities that will disturb less than the following square feet of paint surfaces in 30 calendar days (counting all paint on a removed component):
 - 6 square feet per room for interior activities; or
 - 20 square feet for exterior activities.However, this exemption does *not* apply to the following:
 - Window replacement.
 - Demolition of painted surface areas.
 - Using any of the following:
 - Open-flame burning or torching;
 - Machines to remove paint through high-speed operation without HEPA exhaust control; or
 - Operating a heat gun at temperatures at or above 1100 degrees Fahrenheit.
- **No Lead-Based Paint Will Be Disturbed:** If one of the following methods is used to determine that the paint on the component to be disturbed was not lead-based paint:
 - Written determination by certified lead inspector or risk assessor; or
 - Paint chip sampling by a certified renovator (unless specifically excluded by State regulation); or
 - Proper use of EPA-recognized test kit by certified renovator (unless specifically excluded by State regulation). There are currently three test kits approved by the EPA for use (one of which is only permitted for use in Massachusetts).

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Note that when either of the last two methods is utilized, the person contracting for renovation and tenant, when applicable, must be informed of the following by certified renovator within 30 days after renovation complete, or delivery of invoice. This information must be provided to both parties free of charge.

- Manufacturer and model of test kit
 - Description of component tested, including location
 - Results of testing
 - Laboratory where samples were sent for analysis (paint chip sampling only)
 - Dimensions of sample area (paint chip sampling only)
- **Do-It-Yourself:** Work performed by owners themselves in dwellings in which they personally reside.

EPA's RRP Rule Does Not Preempt Other Rules Including HUD, State, and Local Requirements

- **Twelve states have been authorized to administer and enforce the provisions of the RRP rule.** The authorized states are Alabama, Georgia, Iowa, Kansas, Massachusetts, Mississippi, North Carolina, Oregon, Rhode Island, Utah, Washington, and Wisconsin. These states may have additional restrictions and requirements under their own RRP Legislation. For more information visit the following websites:
 - Alabama: www.adph.org/lead/
 - Georgia: www.gaepd.org/Documents/lpb_leadpaint.html#lbprtq
 - Iowa: www.idph.state.ia.us/eh/lead_poisoning_prevention.asp#regulations
 - Kansas: www.kshealthyhomes.org/lead_regulations.htm
 - Massachusetts: www.mass.gov/lwd/labor-standards/lead-program/
 - Mississippi: www.deq.state.ms.us/MDEQ.nsf/page/Air_Lead-BasedPaint
 - North Carolina: epi.publichealth.nc.gov/lead.html
 - Oregon: public.health.oregon.gov/Pages/Home.aspx
 - Rhode Island: www.health.ri.gov/healthrisks/poisoning/lead/index.php
 - Utah: www.airquality.utah.gov/HAPs/lead/index.htm
 - Washington:
www.commerce.wa.gov/portal/alias_CTED/lang_en/tabID_515/DesktopDefault.aspx
 - Wisconsin: www.dhs.wisconsin.gov/lead/
- **A few states have laws pre-dating the RRP Rule and therefore have additional training requirements.** These states include New Jersey, Illinois, Ohio, and California.
- **The RRP Rule requires certain documentation to be completed, filed, and in some cases presented to the client.** The following documents must be kept for three years after the completion of the job:
 - Proof of pre-renovation education
 - Non-certified renovator training and skills reviewed
 - EPA test kit and/or paint chip sampling documentation
 - Post renovation report

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- Certificates for both the renovator assigned to the job and the commissioned firm (which must be kept at the work site during renovation activities)

Limits on Scope of Rule:

- **Emergency Renovations Not Due to Elevated Blood Level:** Exempt from information distribution, warning signs, containment, waste handling, training, and certification requirements to extent necessary to respond to emergency. However, cleaning requirements, cleaning verification, and recordkeeping are still required. The nature of the emergency must be documented in the post renovation report. An emergency renovation is one that:
 - Is a sudden, unexpected event, and,+
 - If not immediately attended to:
 - Presents a safety or public health hazard; or
 - Threatens equipment and/or property with significant damage.
- **Emergency Renovations in Response to Elevated Blood Lead in Resident Child:** Interim controls are exempt from advance information distribution requirements.

Milestones in EPA's Renovation, Repair, and Painting Rule

Deadlines	Training Firms	Renovation Firms	Certified Renovators (Individuals)	<i>Renovate Right</i> pamphlet	EPA-Recognized Test Kits
6/21/2008			Stop claims of training for EPA certification as renovator or dust sampling technician without accreditation.		EPA recognizes negative tests.
12/22/2008				New <i>Renovate Right</i> pamphlet must be used.	
4/22/2009	May apply for EPA accreditation.				
10/22/2009		May apply for EPA certification.			
4/22/2010	Compliance with Work Practices Required; training and certification not required.				
7/6/2010			Opt-out rule removed for all non-authorized states and those authorized states that adopt the rule by reference.		
10/4/2011	Changes in training requirements listed.		Paint chip sampling permitted for Certified Renovator; requirements for vertical containment listed.	Page 10 of pamphlet changed, explaining option for dust clearance testing.	
Possible Future Revisions			RRP for commercial units.		

G. EPA's New Renovation, Repair, and Painting Rule

Advance Information Distribution Requirements

40 CFR 745.84

	Inside Dwelling Units in Target Housing	In Common Areas of Multi-Unit Target Housing	In Child-Occupied Facilities (including in target housing)
When to Notify?	No more than 60 days before beginning work (7 days if mailing).		
What to Deliver?	EPA Pamphlet ¹	Either: 1. Written notice to each affected unit; ⁴ or 2. Post informational signs ⁶ and EPA Pamphlet. ^{1,5}	EPA Pamphlet ¹
Documentation of Delivery to Owner	Owner's signature on acknowledgment ² or certificate of mailing.		
Documentation of Delivery to Adult Occupant	Same as above (for owner) or certify in writing that attempt made but was unsuccessful. ³	<i>See Additional Documentation Below.</i>	If facility is not owner, then same as above or certify in writing that attempt made but was unsuccessful. ³
Notice to Parents or Guardians	<i>No additional notice required.</i>	<i>No additional notice required.</i>	Provide EPA pamphlet and renovation information to parents and guardians by either: 1. Mail; 2. Hand delivery; or 3. Post informational signs ⁶ and EPA Pamphlet. ^{1,5}
Notice of Changes to Scope, Locations and Dates of Work	<i>None Required</i>	If notice given to each affected unit, update notice before initiating work.	<i>None required</i>
Additional Documentation	<i>None Required</i>	Signed and dated statement of steps performed to notify all occupants and provide them with EPA pamphlet.	Signed and dated statement of steps performed to notify parents and guardians and provide them with EPA pamphlet.
Post-Renovation 30-Day Notice to Person Contracting for Renovation.	<ul style="list-style-type: none"> • If EPA-recognized test kits were used, provide manufacturer and model of test kit used, description and location of components tested, and test kit results. • If dust clearance sampling is performed in lieu of cleaning verification, provide copy of the dust sampling report. 		

¹ EPA's new *Renovate Right: Important Lead Hazard Information for Families, Child Care Providers, and Schools*. The existing *Protect Your Family from Lead in Your Home* pamphlet may be used before 12/22/2008.

² Must acknowledge receipt of the EPA pamphlet prior to start of renovation and contain the address of unit undergoing renovation, name and signature of owner or occupant, and the date of signature. It must be in same language as contract for renovation for owner and for lease for occupant of non-owner occupied target housing.

³ Certification requires address of unit, date and method of delivery, names of person making delivery, reason for acknowledgement, signature of certified renovator; and date of signature.

⁴ Notice must describe the general nature and locations of the planned renovation activities, the expected starting and completion dates, and a statement of how occupant can get pamphlet at no charge from renovation firm.

⁵ If pamphlet is not posted, then provide information on how interested occupants can review a copy of the pamphlet or obtain a copy from renovation firm at no cost.

⁶ Signs must describe general nature and locations of the renovation and the anticipated completion date.

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Required Work Practices for Renovations

40 CFR 745.85

	Interior Renovations	Exterior Renovations
Information Distribution 40 CFR 745.84	<i>See Previous Table</i>	
Work Area Identification	Physical area that the Certified Renovator establishes to contain the dust and debris generated by renovation.	
Occupant Protection		
<ul style="list-style-type: none"> Where to post signs? 	Entrance way to the room(s) where renovation is occurring.	Perimeter of work area.
<ul style="list-style-type: none"> What to say on signs? 	Warn occupants and others not involved in renovation to remain outside the work area. OSHA Lead Warning Sign is acceptable.	
<ul style="list-style-type: none"> What language? 	Primary language of occupants to extent practicable.	
<ul style="list-style-type: none"> When to post signs? 	Before beginning renovation until after post-renovation cleaning verification is completed or results from clearance testing have been received..	
Containing the Work Area		
<ul style="list-style-type: none"> Isolate work area. 	Take steps necessary to ensure no dust or debris leaves work area while renovation is under way.	
<ul style="list-style-type: none"> Maintain integrity of containment. 	Ensure plastic and other impermeable materials are not torn or displaced.	
<ul style="list-style-type: none"> Emergency exit 	Ensure containment installed so that it does not interfere with occupant and worker egress in an emergency.	
Preparing the Work Area		
<ul style="list-style-type: none"> Objects in Work Area 	Remove or cover with impermeable material with all seams and edges sealed.	<i>Not Required</i>
<ul style="list-style-type: none"> Ducts Opening in Work Area 	Close and cover all ducts with impermeable material.	<i>Not Required</i>
<ul style="list-style-type: none"> Windows and Doors in Work Area 	Close windows and doors. Cover doors with impermeable material.	Close doors and windows within 20', and, on multi-story buildings, all below renovation.
<ul style="list-style-type: none"> Access Doors 	If door is used while job is being performed, allow workers to pass through while confining dust and debris to work area.	
<ul style="list-style-type: none"> Floors / Ground 	Cover with taped-down impermeable material 6' beyond the perimeter of surfaces undergoing renovation or a sufficient distance to contain the dust, whichever is greater.	Cover with disposable impermeable material extending 10' beyond perimeter of surfaces undergoing renovation or a sufficient distance to collect falling paint debris, whichever is greater, unless the property line prevents 10' of such ground covering.
<ul style="list-style-type: none"> Vertical Containment 	May be used to decrease the distance of horizontal containment.	Required whenever renovation activities are within 10' of neighboring property line.
<ul style="list-style-type: none"> Tools 	Ensure all personnel, tools, waste containers, and other items are free of dust and debris before leaving the work area.	
Prohibited and Restricted Work Practices	The following must not be used in the work area: <ul style="list-style-type: none"> Open-flame burning or torching; Machines to remove paint through high-speed operation without HEPA exhaust control; or Operating a heat gun at temperatures at or above 1100 degrees Fahrenheit. 	
Waste from Renovations		
<ul style="list-style-type: none"> During Work 	Contain waste to prevent release of dust and debris before the waste is removed from the work area for storage or disposal. If a chute is used to remove waste from work area, it must be covered.	
<ul style="list-style-type: none"> End of Day and End of Work 	Collected waste must be stored under containment, in an enclosure, or behind a barrier that prevents release of dust and debris out of work area and prevents access to dust and debris.	
<ul style="list-style-type: none"> Transporting Waste 	Contain waste to prevent release of dust and debris.	

G. EPA’s New Renovation, Repair, and Painting Rule

Required Work Practices for Renovations

40 CFR 745.85

	Interior Renovations	Exterior Renovations
Cleaning the Work Area		
<ul style="list-style-type: none"> • Paint Chips and Debris 	Collect and, without dispersing any of it, seal this material in a heavy-duty bag.	
<ul style="list-style-type: none"> • Plastic Sheeting 	Leave sheeting to isolate contaminated rooms in place under after cleaning and removal of other sheeting. Mist protective sheeting before folding it. Fold the dirty side inward. Tape shut to seal or seal in heavy-duty bags.	
<ul style="list-style-type: none"> • General 	Clean all objects and surfaces in work area and 2’ outside work area cleaning from higher to lower	
<ul style="list-style-type: none"> • Walls 	Use HEPA vacuum ¹ or wipe with a damp cloth	
<ul style="list-style-type: none"> • Carpets and Rugs 	Thoroughly vacuum with a HEPA vacuum ¹ equipped with a beater bar.	
<ul style="list-style-type: none"> • Remaining Surfaces 	Thoroughly vacuum remaining surfaces and objects with a HEPA vacuum. ¹	
<ul style="list-style-type: none"> • Final Cleaning – Other Than Floors 	Wipe remaining surfaces and objects, except for carpeted or upholstered surfaces, with a damp cloth.	
<ul style="list-style-type: none"> • Final Cleaning – Uncarpeted Floors 	Mop floors thoroughly using a mopping method that keeps wash water separate from the rinse water or using a wet mopping system. ²	
Post Cleaning Verification	<i>See Next Table</i>	
<p>¹“HEPA vacuum” is a vacuum cleaner designed with a high-efficiency particulate (HEPA) filter as the last filtration stage. A HEPA filter is capable of capturing particles of 0.3 microns with 99.97% efficiency. The vacuum cleaner must be designed so that all the air drawn into the machine is expelled through the HEPA filter with none of the air leaking past it.</p> <p>²“Wet mopping system” means a device with the following: a long-handle, a mop head designed to be used with disposable absorbent cleaning pads, a reservoir for cleaning solution, and a built-in mechanism for distributing or spraying the cleaning solution onto a floor, or a method of equivalent efficacy.</p>		

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Post-Renovation Cleaning Verification 40 CFR 745.85(b)

Activities	Windowsills	Uncarpeted Floors and Countertops in Work Area
Dust clearance testing is an option if contract or other rules require it.	<i>Optional.</i>	
Certified Renovator must personally perform all cleaning verification except recleaning. ¹	Required.	
Step 1: Visually inspect work area for dust, debris, and residue.		
Step 2: If failed visual, have it recleaned. ¹		
Step 3: Wipe with wet disposable cleaning cloth. ²	Required. Cloth must be damp to touch. One cloth per window sill.	Required. Cloth must be damp when used. One cloth per 40 square feet.
Step 4: Compare to cleaning verification card. ³ Passes if lighter than card.	Required.	
Step 5: If failed, have it recleaned. ¹	Required if failed first wipe.	
Step 6: Wipe surface again with new wet disposable cleaning cloth. ²	Required if failed first wipe. Can use clean surface of used wipe.	Required if failed first wipe.
Step 7: Compare to card. Passes if lighter than card.	Required if failed first wipe.	
Step 8: If failed, wait one hour or until dried completely whichever is longer.	Required if failed second wipe.	
Step 9: Wipe with dry, disposable cleaning cloth. ⁴	Required if failed second wipe. Passes even if darker than card.	
Notice to owner or occupant.	Results must be recorded in post renovation report.	
¹ <i>Recleaning</i> means: <ol style="list-style-type: none"> a. Thoroughly vacuum surfaces and objects in the work area with a HEPA vacuum. HEPA vacuum must have a beater bar when vacuuming carpets and rugs. b. Wipe all remaining surfaces and objects in the work area, except for carpeted or upholstered surfaces, with a damp cloth. c. Mop uncarpeted floors thoroughly using a mopping method that keeps wash water separate from the rinse water or using a wet mopping system (using disposable absorbent cleaning pads). 		
² <i>Wet disposable cleaning cloth</i> means a commercially available, premoistened, white disposable cloth designed to be used for cleaning hard surfaces.		
³ <i>Cleaning verification card</i> means a card developed and distributed or otherwise approved by EPA for the purposes of determining whether post-renovation cleaning has been properly completed.		
⁴ <i>Dry disposable cleaning cloth</i> means a commercially-available, dry, electrostatically-charged, white disposable cloth designed to be used for cleaning hard surfaces.		

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Recordkeeping and Reporting Requirements (40 CFR 745.86)

Firms performing renovations must retain and, if requested, make available to EPA all records necessary to demonstrate compliance with this subpart for a period of three years following completion of the renovation. This three-year retention requirement does not supersede longer obligations required by other provisions for retaining the same documentation, including any applicable State or Tribal laws or regulations.

Records that must be retained shall include (where applicable):

1. **Exemptions:**

- a. Reports certifying that a determination had been made by a lead inspector or risk assessor that lead-based paint is not present on the components affected by the renovation, as described in § 745.82(b)(1).
- b. Any signed and dated statements received from owner-occupants documenting that the requirements of § 745.85 do not apply. These statements must include a declaration that the renovation will occur in the owner's residence, a declaration that no children under age six reside there, a declaration that no pregnant woman resides there, a declaration that the housing is not a child-occupied facility, the address of the unit undergoing renovation, the owner's name, an acknowledgment by the owner that the work practices to be used during the renovation will not necessarily include all of the lead-safe work practices contained in EPA's Renovation, Repair, and Painting rule, the signature of the owner, and the date of signature. These statements must be written in the same language as the text of the renovation contract, if any. (This applies to work performed between 4/22/2010 and 7/6/2010 only).

2. **Information Distribution:**

- a. Signed and dated acknowledgments of receipt as described in § 745.84(a)(1)(i), (a)(2)(i), (b)(1)(i), (c)(1)(i)(A), and (c)(1)(ii)(A);
- b. Certifications of attempted delivery as described in § 745.84(a)(2)(i) and (c)(1)(ii)(A);
- c. Certificates of mailing as described in § 745.84(a)(1)(ii), (a)(2)(ii), (b)(1)(ii), (c)(1)(i)(B), and (c)(1)(ii)(B); and
- d. Records of notification activities performed regarding common area renovations, as described in § 745.84(b)(3) and (4), and renovations child-occupied facilities, as described in § 745.84(c)(2).

3. **Certified Renovator:** Documentation of compliance with the requirements of § 745.85, including documentation that certified renovator:

- a. Was assigned to the project;
- b. Provided on-the-job training for workers used on the project;
- c. Performed or directed workers who performed all of the tasks described in § 745.85(a);
- d. Performed the post-renovation cleaning verification described in § 745.85(b); and
- e. Carries or has on premises the certified renovator's training certificate.

4. **Work Practices:** Certification by the certified renovator assigned to the project that:

- a. Training was provided to workers (topics must be identified for each worker);
- b. Warning signs were posted at the entrances to the work area;

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- c. If test kits were used, that the specified brand of kits was used at the specified locations and that the results were as specified;
 - d. If paint chip samples were collected, the samples were sent to a NLLAP-accredited laboratory, and that the name of laboratory and specified locations/dimensions of samples and results were as recorded;
 - e. The work area was contained by:
 - 1. Removing or covering all objects in the work area (interiors);
 - 2. Closing and covering all HVAC ducts in the work area (interiors).
 - 3. Closing all windows in the work area (interiors) or closing all windows in and within 20 feet of the work area (exteriors).
 - 4. Closing and sealing all doors in the work area (interiors) or closing and sealing all doors in and within 20 feet of the work area (exteriors).
 - 5. Covering doors in the work area that were being used to allow passage but prevent spread of dust.
 - 6. Covering the floor surface, including installed carpet, with taped-down plastic sheeting or other impermeable material in the work area six feet beyond the perimeter of surfaces undergoing renovation or a sufficient distance to contain the dust, whichever is greater (interiors); or covering the ground with plastic sheeting or other disposable impermeable material anchored to the building extending 10 feet beyond the perimeter of surfaces undergoing renovation or a sufficient distance to collect falling paint debris, whichever is greater, unless the property line prevents 10 feet of such ground covering, weighted by heavy objects (exteriors).
 - 7. Installing vertical containment if renovation work is performed within 10' of neighboring property line, or if work area is less than required amount.
 - f. Waste was contained onsite and while being transported offsite.
 - g. The work area was properly cleaned after the renovation by:
 - 1. Picking up all chips and debris, misting protective sheeting, folding it dirty side inward, and taping it for removal.
 - 2. Cleaning the work area surfaces and objects using a HEPA vacuum and/or wet cloths or mops (interiors).
 - h. The certified renovator performed the post-renovation cleaning verification (the results of which must be briefly described, including the number of wet and dry cloths used).
5. **Emergency Renovations:** If the renovation firm was unable to comply with all of the requirements of this rule due to an emergency as defined in § 745.82, the firm must document the nature of the emergency and the provisions of the rule that were *not* followed.



**U.S. Department of Housing and Urban Development
Office of Public and Indian Housing**

SPECIAL ATTENTION OF:

Regional Directors; State and Area
Coordinators; Public Housing Hub
Directors; Program Center Coordinators;
Troubled Agency Recovery Center Directors;
Special Applications Center Director;
Administrators; Offices of Native American
Programs; Public Housing Agencies; Public
Housing; Housing Choice Voucher/Section 8;
Tribally Designated Housing Entities;
Indian Tribes; Resident Management
Corporations

NOTICE: PIH-2011-22

Issued: April 26, 2011

Cross Reference:

24 CFR 903.7(e) (2)

24 CFR 990.165

7 U.S.C. 136r-1 Integrated Pest
Management

This Notice Supersedes

PIH Notice 2009-15, PIH Notice
2008-24, PIH Notice 2007-12

Subject: Promotion of Integrated Pest Management (IPM) as an environmentally-sound, economical and effective means to address a major resident concern.

1. **Purpose.** The purpose of this Notice is to promote and encourage the use of IPM by Public Housing Authorities (PHAs), Indian tribes, Tribal Designated Housing Entities (TDHEs), and owner/agents providing assistance through the HCV program. This notice provides guidance to Public Housing Authorities (PHAs) on the benefits of IPM, additional technical assistance and training opportunities for PHAs. Pest management is integral to the provision of safe and sanitary housing. In accordance with 24 CFR 903.7 (e) (2), PHAs must include in their PHA plans a description of any measures necessary for the prevention or eradication of pest infestations. IPM is an ecological approach using an array of methods to prevent and control pests with reduced reliance on pesticides. Procedures contained within this notice remain in effect until superseded by subsequent HUD Directive or guidance.
2. **Applicability.** This notice applies to PHAs administering the public housing and project based Section 8 program, and may be of interest to Indian tribes/TDHEs as well as owners/agents providing assisted housing through the Housing Choice Voucher (HCV) Program. The decision to use IPM techniques in their ongoing pest control effort is under PHA, Indian tribes/TDHE discretion. 24 CFR 990.165(a) covers cost associated with Project Expense Level (PEL) such as maintenance expenses. IPM is a maintenance expense.
3. **Background.** The goal of IPM as defined by the Environmental Protection Agency (EPA) is to control pests by the most economical long term means, and with the least possible hazard to people, property, and the environment. To undertake IPM, project managers should be committed to ongoing or continuous monitoring and record keeping, educational outreach to residents and staff as well as implementing good communication strategies between residents and building managers. IPM methods include: restricted pest access to

food/water; vigilant sanitation and waste management; mechanical control; physical barriers; structural maintenance; and, where necessary, the judicious use of pesticides.

4. **Fundamentals of IPM.** IPM efforts must involve PHA staff, contractors, residents, and include:
 - a. Communicating the PHA’s IPM policies and procedures to be provided in the appropriate format to meet the needs of all residents including persons with limited English proficiency and in formats that may be needed for persons who are visually or hearing impaired. This applies to administrative staff, maintenance personnel, and contractors as well.
 - b. Identifying the environmental conditions that lead to pests and educating residents.
 - c. Identifying pests and immediately reporting the presence of pests.
 - d. Establishing an ongoing monitoring and record keeping system for regular sampling and assessment of pests, surveillance techniques, and remedial actions taken, include establishing the assessment criteria for program effectiveness. This is a highly effective preventative measure that can help reduce the possibility of a pest infestation outbreak.
 - e. Determining, with the involvement of residents, the pest population levels – by species – that will be tolerated, and setting thresholds at which pest populations warrant action.
 - f. Improving waste management and pest management methods.
 - g. Selecting the appropriate pesticides and insecticides to use. Some residents may suffer from Multiple Chemical Sensitivity or other Environmental Illnesses.
 - h. Ongoing efforts to monitor and maintain structures and grounds (e.g., sealing cracks, eliminating moisture intrusion/accumulation) and adding physical barriers to pest entry and movement.
 - i. Developing an outreach/educational program to ensure that leases reflect residents’ responsibilities for: (1) proper housekeeping, which includes sanitation upkeep and the reduction of clutter, trash removal and storage, (2) immediately reporting the presence of pests, leaks, and mold, (3) cooperating with PHA specific IPM requirements such as obtaining permission of PHA management before purchasing or applying any pesticides, and (4) avoiding introduction of bed bugs and other pests into buildings on used mattresses and other recycled furniture. See “Preventing and Getting Rid of Bed Bugs Safely,” New York City Department of Health and Mental Hygiene <http://www.nyc.gov/html/doh/downloads/pdf/vector/bed-bug-guide.pdf>
 - j. Check with local health department to determine if your state has laws for re-used furnishings.
 - k. The judicious use of pesticides when necessary, with preference for products that, while producing the desired level of effectiveness, pose the least harm to human health and the environment. Residents should notify PHA management before pesticides are applied.
 - l. Providing and posting “Pesticide Use Notification” signs or other warnings.
5. **Health Concerns.** Pests may adversely impact the health of residents and contribute to worsening some diseases, such as allergies and asthma. Cockroaches can cause asthma in children and can transfer disease-causing organisms to food and surfaces they contaminate. Rodents, such as mice and rats, carry disease, can trigger asthma attacks and even cause fires by gnawing through electrical wires. Although bed bugs are not known to transmit infectious diseases, their bites can lead to secondary infections. Bed bugs can cause

emotional distress and sleep deprivation for residents as well. Bed bug infestations can spread quickly and must be treated aggressively. All pest control methods are targeted to protecting the health of residents and staff. Although applying pesticides may be effective in eliminating pest populations, many of these chemicals are associated with health and/or environmental risks, and their use should be minimized if alternative methods exist. This is especially important in buildings housing vulnerable age groups such as children or the elderly and in buildings housing residents with compromised immune systems or who may suffer from Multiple Chemical Sensitivity and other environmental illnesses. Therefore, IPM offers the potential to ensure efficacy of pest elimination while protecting the health of residents, staff and the environment.

6. **Building.** Most of the effective methods of pest elimination, including ongoing repairs, erection of barriers, and monitoring, will extend the useful life of a building and as a result generate significant savings that could offset the costs of the pest control. Many of these non-application methods, including structural maintenance, and inspecting for and repairing leaking pipes and cracks in roofs, walls, and windows are effective in preventing moisture intrusion and accumulation. Additionally, IPM-conscious PHAs assess the need to install physical barriers to both pest entry and pest movement within every structure thereby reducing the spread of pest infestations.
7. **Implementation.** HUD promotes IPM as a pest control method. IPM effectively eliminates pests in safer and long term cost-effective ways than traditional pesticide treatments. IPM frequently has proven to be more effective in reducing pest populations than relying solely on broadcast pesticides. The Boston Housing Authority (BHA) experienced approximately one-third reduction in pest related work orders over multiple years in multiple sites. BHA has maintained this reduction and now uses IPM in all its BHA maintained properties. Continuation of the IPM program after initial development cost is considered preventative maintenance expense and is an eligible program activity under the Public Housing Operating Subsidy as codified at 24 CFR 990.165. Successful IPM requires resident participation through proper housekeeping, reporting of pest infestations, and trash removal. Residents can monitor pest populations and assist in identifying how to eliminate access to food and water for pests. Resident organizations must be prepared to assist residents who need help to follow the IPM policy. HUD encourages PHAs to partner with local pest management organizations.
8. **Procurement of IPM Services.** If a PHA uses an outside contractor for pest control, the PHA's pest control/IPM policies and procedures should be incorporated into the specifications or statement of work for the pest management contract. PHAs using an outside contractor are encouraged to use companies that are trained and certified to provide IPM services either through Green Shield certified (<http://www.greenshieldcertified.org/>) or Green Pro (<http://www.npmagreenpro.org/>). The PHA should also consider training for maintenance staff, residents, Resident Councils as well as PHA administrative staff who oversee housing developments or administer occupancy and rental duties such as unit housekeeping inspections.
9. **PHA Maintenance Staff.** If a PHA uses its own maintenance staff for pest management, proper training in the PHA's IPM procedures is essential. It is especially critical to be trained in the proper treatments methods PHAs can use when treating for bed bugs. The contract administrator for any pest management contract should be trained as well. Successful results rely upon proper implementation; training is therefore of critical

importance. IPM training is available at: <http://www.stoppests.org/> and <http://www.healthyhomestraining.org/ipm/training.htm>.

10. **Area of High Concern, Bed bugs.** As the number of bed bug infestations rise throughout the country, HUD is in the process of developing protocols to address this growing problem. HUD is addressing the unit inspection process as well as developing the tools necessary for PHAs to identify, treat and monitor the effectiveness of bed bug treatments in its portfolio. Identifying, reporting, treating and monitoring pest infestations are all critical components of IPM and are effective in addressing the bed bug problem.
11. **Reference Materials for Implementing IPM.** The below list of IPM practices does not constitute a HUD endorsement of any specific practice, but provides IPM ideas and practices that have been used to improve pest management while reducing unnecessary dependence on pesticides. HUD encourages PHAs, Indian tribes/TDHEs to share their policies, procedures, resident leases, and written case studies so that these may be published on the HUD website for others to read.
 - a. National Center for Healthy Housing: <http://www.healthyhomestraining.org/ipm>
 - b. Bed Bugs: “What’s Working for Bed Bug Control in Multi-family Housing”
http://www.healthyhomestraining.org/ipm/NCHH_Bed_Bug_Control_2-12-10.pdf
<http://pestworld.org/pest-world-blog/the-bed-bug-hub-one-stop-shop-for-bed-bug-information>
 - c. National Pesticide Information Center: <http://www.npic.orst.edu/>
 - d. Integrated Pest Management (IPM), A Guide for Managers and Owners of Affordable Housing, Boston Public Health Commission:
http://http://asthmaregionalcouncil.org/uploads/IPM/asthma_ipm_guide.pdf.
 - e. U.S. Environmental Protection Agency:
 - i. General IPM information <http://www.epa.gov/opp00001/contolling/index.htm>
housing): <http://www.epa.gov/pesticides/ipm>
 - ii. EPA staff contacts: <http://www.epa.gov/pesticides/about/contacts.htm#ipm>
 - iii. List of EPA IPM publications and instructions for ordering documents:
<http://www.epa.gov/oppfead1/Publications/catalog/subpage3.htm>
 - f. Massachusetts Department Agriculture Resources – Building Managers and Landlords:
http://www.mass.gov/agr/pesticides/docs/CIB_Building_Managers.pdf
 - g. HUD funded “Healthy Public Housing Project” conducted by the Harvard School of Public Health In Boston Public Housing, <HTTP://www.hsph.harvard.edu/hphi/>
 - h. Bed Bug Fact Sheets in English and Spanish produced by Dr. Dini Miller,
<http://www.vdacs.virginia.gov/pesticides/bedbugs-facts.shtml>
12. **PHA Case Studies On IPM Application.**
 - i. Cuyahoga Housing Authority:
http://www.healthyhomestraining.org/ipm/Case_Study_Cuyahoga_10-20-07.pdf
 - ii. Boston Housing Authority:
http://www.healthyhomestraining.org/ipm/casestudy_holgate.pdf
 - iii. New York City Department of Health, Columbia University and the New York City Housing Authority: <http://www.beyondpesticides.org/dailynewsblog/?p=1604>

13. For further information contact Leroy Ferguson at (202) 402-2411 or email at Leroy.Ferguson@hud.gov or you can contact the nearest HUD Field Office of Public Housing

within your state. Indian tribes and TDHEs should contact the nearest HUD Office of Native American Programs. Locations of these offices are available on HUD's website at <http://www.hud.gov>.

_____/s/
Sandra B. Henriquez, Assistant Secretary for
Public and Indian Housing



**U.S. Department of Housing and Urban Development
Office of Public and Indian Housing**

SPECIAL ATTENTION OF:

NOTICE: PIH-2012-17

Regional Directors; State and Area
Coordinators; Public Housing Hub
Directors; Program Center Coordinators;
Troubled Agency Recovery Center Directors;
Special Applications Center Director;
Administrators; Offices of Native American
Programs; Public Housing Agencies;

Issued: February 28, 2012

Expired: This Notice remains
in effect until amended, superseded,
or rescinded

Housing; Housing Choice Voucher/Section 8;
Tribally Designated Housing Entities;
Indian Tribes; Resident Management
Corporations

Cross References:

SUBJECT: Guidelines on Bedbug Control and Prevention in Public Housing

I. Purpose

Bedbug infestations have become a serious problem in housing throughout the country. Public Housing properties are not immune to infestations. This Notice provides information and references to best practices regarding the prevention and control of bedbug infestations. It also provides guidance on the rights and responsibilities of HUD, Public Housing Agencies (PHAs) and tenants with regard to bedbug infestations.

II. Background

After a long absence, bedbug infestations are a growing problem in the United States today. According to the United States Environmental Protection Agency (EPA), bedbug populations have increased dramatically. Bedbugs are considered a pest of significant public health importance by the EPA and the Centers for Disease Control and Prevention (CDC). Although the insects are not known to transmit disease, bites may itch and cause an allergic reaction in some people, which may lead to secondary infections. The presence of bedbugs may also contribute to stress or anxiety.

Experts suspect the resurgence is associated with greater international and domestic travel, lack of knowledge regarding the complex measures needed to prevent and control bedbugs, changes in pesticide availability and technology, and increased resistance of bedbugs to available pesticides. Bedbugs are not an indicator of poor sanitation, but excess clutter can provide them more places to hide, making early detection and targeted control

difficult.

HUD has received numerous reports of bedbug infestations in Public Housing properties in various regions. HUD is working closely with other federal agencies to develop and share best practices for preventing and controlling bedbugs.

III. Applicability

This notice applies to PHAs administering the public housing and project based Section 8 program. It may also be of interest to Indian tribes/TDHEs as well as owners/agents providing assisted housing through the Housing Choice Voucher (HCV) Program.

IV. Prevention of Bedbug Infestations

The best approach to bedbug management is to prevent an infestation from occurring in the first place. Federal agencies, such as EPA and HUD, are working in tandem to develop and share recommendations to prevent bedbug infestations.

PHAs are strongly encouraged to develop an Integrated Pest Management (IPM) Plan. Such plans describe the ongoing efforts the property management will take to prevent and respond to pests. For more details on IPM, please see the online guide at <http://www.stoppests.org>. According to the EPA, principles of IPM for bedbugs include:

- Raising awareness through education on prevention of bedbugs;
- Inspecting infested areas, plus surrounding living spaces;
- Checking for bedbugs in luggage and clothes when returning home from a trip;
- Looking for bedbugs or signs of infestation on secondhand items before bringing the items home;
- Correctly identifying the pest;
- Keeping records – including dates and locations where pests are found;
- Cleaning all items within a bedbug infested living area;
- Reducing clutter where bedbugs can hide;
- Eliminating bedbug habitats;
- Physically removing bedbugs through cleaning;
- Using pesticides carefully according to the label directions; and,
- Following up on inspections and possible treatments.

In addition or as part of an IPM plan, PHAs are strongly encouraged to take the following preventive steps:

- Provide training for staff to identify bedbugs, and to perform ongoing prevention actions as outlined in the IPM. When a community is at high risk for bedbugs (for example, if the community has experienced prior infestations), periodic building inspections are recommended.

- Actively engage residents in efforts to prevent bedbugs. Education and involvement of tenants is a critical component of IPM for bedbugs. Bedbugs may often go undetected and unreported and because they are active at night tenants may not be aware of their presence. PHAs may wish to hold workshops for tenants to learn to identify bedbugs, to create unfriendly environments for pests, and to report suspicions of bedbugs as soon as possible.
- Provide orientation for new tenants and staff, and post signs and handouts regarding bedbug prevention.

More information on bedbug prevention may be found by accessing the following websites:¹

- **Healthy Homes Training:** *What's Working for Bedbug Control in Multifamily Housing?: Reconciling best practices with research and the realities of implementation.*
http://www.healthyhomestraining.org/ipm/NCHH_Bed_Bug_Control_2-12-10.pdf.
- **National Pest Management Association Bedbug Hub:**
<http://pestworld.org/pest-world-blog/the-bed-bug-hub-one-stop-shop-for-bed-bug-information>
- **National Pest Management Association Best Practices Website:**
<http://www.bedbugbmps.org>
- **Environmental Protection Agency:**
<http://www.epa.gov/pesticides/bedbugs/>
- **Public Housing Environmental Conservation Clearinghouse (PHECC)**
<http://www.hud.gov/offices/pih/programs/ph/phecc/pestmang.cfm>

V. Addressing Infestations

The PHA should respond with urgency to any tenant report of bedbugs. Within 24 hours of the tenant report, the PHA should make contact with the tenant, provide the tenant with information about control and prevention of bedbugs and discuss measures the tenant may be able to take in the unit before the inspection is performed. However, a bedbug inspection and, if necessary, treatment, may take time to schedule. The PHA should endeavor to take appropriate action within a reasonable time period using the guidelines provided below.

¹ An additional resource for interested parties is the *Bedbug Handbook*. L.J. Pinto, R. Cooper, and S.K. Kraft, *Bedbug Handbook: The Complete Guide to Bedbugs and Their Control* (Mechanicsville, MD: S.K. Pinto & Associates, 2007).

Following a report of bedbugs, the PHA or a qualified third party trained in bedbug detection should inspect the dwelling unit to determine if bedbugs are present. It is critical that inspections be conducted by trained staff or third party professionals. Low level inspections may escape visual detection. For this reason, multiple detection tools are recommended. Recent research indicates that “active” bedbug monitors containing attractants can be effective tools for detecting early infestations. Some licensed pest control applicators use canine detection to verify the presence of bedbugs. The inspection should cover the unit reporting the infestation and no less than surrounding apartments consisting of the units above, below, left and right, and should be completed within three business days of a tenant complaint if possible. If reputable, licensed pest control companies are unattainable within three calendar days, the PHA is required to retain documentation of the efforts to obtain qualified services. If an infestation is suspected but cannot be verified using the methods described above, the PHA should re-inspect the unit(s) periodically over the next several months.

When an infestation is identified, the unit and surrounding units should be treated for bedbugs according to the IPM Plan. Chemical treatments are necessary, but not reliable. Therefore, encasement, interception devices, vacuuming, steaming, freezing and commodity or building heat treatments may be utilized as part of the bedbug control effort. Infestations are rarely controlled in one visit. Effective treatment may require two to three visits, and possibly more. The length, method and extent of the treatment will depend on the severity and complexity of the infestation, and the level of cooperation of the residents.

VI. Additional Considerations

PHAs may offer protective tools to residents to help safeguard properties from infestation and recurrences. For example, the PHA may offer residents bed covers, climb-up interceptors, or other detection or protection devices that may become available. PHAs may voluntarily offer to inspect tenants’ furniture before move-in. PHAs may also offer tenants a service of non-chemical treatment of household items upon tenant move-in, non-chemical treatment or inspection of used furniture and/or non-chemical treatment of luggage before it is unpacked when a tenant returns from a trip. Tenants may voluntarily use such services, but PHAs may not require tenants to do so. These services or products are to be offered at the PHAs expense.

A PHA may not deny tenancy to a potential resident on the basis of the tenant having experienced a prior bedbug infestation, nor may give residential preference to any tenant based on a response to a question regarding prior exposure to bedbugs. A PHA may not charge a tenant to cover the cost of bedbug treatment; such costs should be covered by the PHA. HUD reserves the right to approve Lease Addenda. Lease Addenda may not conflict with this Notice.

VII. Tenant Rights and Responsibilities

Tenants are strongly encouraged to immediately report the suspicion of possible bedbugs in a housing unit or other areas of the property. Early reporting allows the pests to be identified and treated before the infestation spreads. Tenants are the first line of defense against bedbug infestations and should be encouraged to create living environments that deter bedbugs. This includes reducing unreasonable amounts of clutter that create hiding places for bedbugs, and regular checking of beds and laundering of linens.

Bedbug infestations can cause health concerns, including physical discomfort and may contribute to stress and anxiety on the part of the residents. Tenants should be advised of the following:

- A PHA may not deny tenancy to a potential resident on the basis of the tenant having experienced a prior bedbug infestation, nor may an owner give residential preference to any tenant based on a response to a question regarding prior exposure to bedbugs.
- A tenant reporting bedbugs may expect expeditious response and attention by the PHA, but should be advised that inspection and, if necessary, treatment of bedbugs may take time to schedule. The inspections should occur within three calendar days of the tenant report when possible.
- Following a report of bedbugs, the PHA or a qualified third party trained in bedbug detection should inspect the dwelling unit to determine if bedbugs are present. It is critical that inspections be conducted by trained staff or third party professionals. The PHA may enter the unit to perform these activities, in accordance with the lease.
- If bedbug infestation is found in the unit, the tenant may expect treatment to begin within five days of the inspection, though depending on the form of treatment, this may not be possible. Tenants should be advised that treatment may take several weeks.
- Tenants are expected to cooperate with the treatment efforts by allowing for heat treatment of clothing and furniture and refraining from placement of infested furniture or other items in common areas such as hallways. Tenant cooperation is shown to expedite the control of bedbugs and to prevent spreading of infestations.
- Management may make staff available to help with moving and cleaning of furniture to accomplish the treatment effort.
- The tenant will not be expected to contribute to the cost of the treatment effort.

- The tenant will not be reimbursed the cost of any additional expense to the household, such as purchase of new furniture, clothing or cleaning services.

VIII. REAC Inspections

Bedbugs should be addressed when reported by staff, tenants or the Real Estate Assessment Center (REAC), regardless of the score of the REAC physical inspection. Inspectors ask the PHA to identify any units and/or buildings that are infested before the inspection begins. When bedbugs are reported or observed, the inspector will record the units and/or buildings affected in the comment section of the Physical Inspection report, noting that bedbugs were reported. The inspector will then select an alternate unit to inspect to replace any unit with observed or reported bedbugs.

REAC sends a “Bedbugs Reported” email to the local PIH field office with a copy to the PIH Regional director when bedbugs are noted in the comments section of a Physical Inspection Report. The PHA will see the information about bedbugs in the comment section of the Physical Inspection Report which provides PHAs with the necessary information to address the situation.

/s/

Sandra B. Henriquez, Assistant Secretary for
Public and Indian Housing

Attachment

Prevention and Safe Removal of Bedbugs

Bedbug infestations have become a serious problem in housing throughout the country. Public Housing properties are not immune to infestations, anyone or any home can get bedbugs. Bedbugs live on human and animal blood and typically hide and live in cracks and crevices in dark and undisturbed locations close to their hosts. They can live for long periods of time and although visible to the naked eye, they may be difficult to detect.

Bedbug Prevention Action Plan

- Inspect in and around sleeping and resting areas at home once a month.
- Look for signs of bedbug activity, active infestations will have fecal spotting, live or dead bedbugs, shed skins and bedbug eggs.
- Avoid used furniture and mattresses, especially discarded furniture and mattresses. Used furniture and refurbished mattresses may have bedbugs and bedbug eggs that are difficult to see.
- Inspect for the signs of bedbugs when traveling away from home. Look for live or dead bedbugs, shed bedbug skins or bedbug eggs and fecal spots on mattresses, clothing or dark cracks and crevices. Wood, metal or plastic furniture, sofas, chairs, tables and many other items may be infested with bedbugs.
- If contact with an active bedbug infestation is suspected away from home, segregate and isolate in sealed plastic bags any exposed luggage, clothing and personal effects until inspection and decontamination can be completed.
- Bedbugs prefer to live in cracks and crevices in areas like baseboards, moldings, window/door frames, and cracks/seams in walls and furniture, especially headboards and bed frames and screw holes.
- Seal baseboards, cracks, crevices, heat, plumbing and electrical services shared between apartments with pest-proofing sealants.
- Encase mattresses and box springs. Seal box springs in an appropriate zippered encasement to prevent bedbugs hiding inside from escaping; this location is commonly affected in bedbug infestations and yet difficult to inspect.
- Thoroughly vacuum apartment, furniture and all belongings and use crevice tools and other attachments where feasible. Place the contents of the vacuum in a tightly sealed disposable bag and remove.

EARLY DETECTION IS CRITICAL Early identification and reporting of infestations by residents to building management and neighbors limits the spread of bedbugs. As soon as possible contact Property Manager and/or pest management company. Report the suspected activity as soon as possible. The longer you wait the more likely the problem is to spread and the more difficult and costly it will be to control.

Bedbug Removal Action Plan

The following sequence of steps has been outlined by the Armed Forces Pest Management Board in order to facilitate control of bedbugs in housing.

- Using a vacuum cleaner (preferably HEPA-filtered), remove the bugs and their cast skins from all observed and suspected harborage sites during the initial inspection, and periodically afterward (once weekly is a suggested self-help action). The vacuum bag should

Prevention and Safe Removal of Bedbugs

be removed immediately afterward, sealed tightly inside a larger plastic bag, and that bag incinerated or placed in the next normal trash collection.

- Launder all infested cloth items in hot water, 120 degrees Fahrenheit or hotter for at least 10 minutes, with soap or detergent, then dry in a warm or hot dryer of at least 140 degrees for at least 20 minutes, or dry clean to kill all bedbug life stages present.
- Enclose each mattress and box spring in a sealed plastic cover, like those sold commercially. These types of encasements should be of high quality and bedbug puncture proof to limit exposure to house dust mites or bedbugs.
- Place and seal all recently laundered cloth items (*e.g.*, bed linens, clothing) inside new large plastic bags or tightly closed bins to prevent any bedbugs from re-infesting them.
- Seal shut all cracks, crevices, and entry points to wall voids, using a high-quality silicone-based sealant, especially within a 20 foot radius of any spot where bedbug bites have been reported, or where the bugs have actually been collected.
- Additional or alternative physical control measures against bedbugs may include: heat, cold, steam, physical mashing and sticky insect monitors.
- A residual insecticide should be applied, according to label directions, to each infested site and preferably to a small area around each site. Such applications often involve treating cracks and crevices. When planning and conducting any such treatments, consider examining, if not treating, the opposite side of any involved wall, floor or ceiling.
- Electrical outlet boxes, and similar voids that cannot be readily sealed, should be treated with an appropriately labeled insecticidal dust.
- Consider including some type of insect growth regulator (IGR) as a concurrent or adjunctive treatment (*e.g.*, as a tank mix).
- Limited use of an aerosol or ULV pyrethroid may facilitate the detection of hidden bedbugs by causing them to move around more, and may also potentially increase their exposure to any previously applied residual insecticide. DO NOT use any over-the-counter “foggers.” They are not very effective and may cause bedbugs to scatter.
- Fumigation or heat (or cold) treatment of batches of furniture, clothing or other items within chambers may be warranted and affordable in specific cases, but whole-structure fumigation to control bedbugs is seldom practical or economically feasible. And such treatments provide no residual effects at all.
- Re-inspection of infested structures and sites should be done about 10-21 days after any initial treatment, and (if needed) again about 10-21 days later, to detect, and to precisely target the treatment (if needed) of any continued infestation.¹

Carefully reintroduce cleaned items. Isolate and contain items that have been properly cleaned, laundered or heat treated. Heavy duty plastic bags or air tight containers may be used for this purpose. Clear bags and containers are preferable.

NEVER USE THE FOLLOWING PRODUCTS FOR BEDBUG TREATMENT:

- **Insecticide “bombs”, total release foggers, camphor, kerosene, diesel, gasoline, alcohol or other similar products. These products can cause serious health problems. They are dangerous if misused and can cause fires and explosions. These products are not appropriate for bedbug management.**

Prevention and Safe Removal of Bedbugs

Additional information about bedbug prevention and treatment may be found by accessing the following resources:

- **Armed Forces Pest Management Board:** *Bedbugs - Importance, Biology and Control Strategies*
<http://www.afpmb.org/sites/default/files/pubs/techguides/tg44.pdf>
- **Environmental Protection Agency:**
<http://www.epa.gov/pesticides/bedbugs/>
- **Healthy Homes Training:** *What's Working for Bedbug Control in Multifamily Housing?: Reconciling best practices with research and the realities of implementation.*
http://www.healthyhometraining.org/ipm/NCHH_Bed_Bug_Control_2-12-10.pdf.
- **National Pest Management Association Bedbug Hub:**
<http://pestworld.org/pest-world-blog/the-bed-bug-hub-one-stop-shop-for-bed-bug-information>
- **National Pest Management Association Best Practices Website:**
<http://www.bedbugbmps.org>
- **New York City Health Department:**
<http://www.nyc.gov/html/doh/downloads/pdf/vector/bed-bug-guide.pdf>
- **Public Housing Environmental Conservation Clearinghouse (PHECC)**
<http://www.hud.gov/offices/pih/programs/ph/phecc/pestmang.cfm>
- <http://www.stoppests.org>
- *Bedbug Handbook*. L.J. Pinto, R. Cooper, and S.K. Kraft
- *Bedbug Handbook: The Complete Guide to Bedbugs and Their Control* (Mechanicsville, MD: S.K. Pinto & Associates, 2007).



ASSISTANT SECRETARY FOR HOUSING-
FEDERAL HOUSING COMMISSIONER

As Special Attention of

All Multifamily Hub Directors
All Multifamily Program Center Directors
All Multifamily Operations Officers
All Directors of Project Management
All Field Counsel

Notice H 2012-5

Issued: April 23, 2012

Expires: This notice remains in effect until amended, revoked, or superseded

Cross References: Housing Notice 2011-20

SUBJECT: Guidelines on Addressing Infestations in HUD-insured and Assisted Multifamily Housing

I. Purpose

This Notice supersedes Housing Notice 2011-20, “Guidelines on Bed Bug Control and Prevention in HUD Insured and Assisted Multifamily Housing.” Readers seeking guidance on the subject of bed bug infestations should instead refer to this Notice, which provides updated information to prevent and address infestations, including but not limited to bed bugs, insects, and all manner of vermin. HUD is providing guidance to Owners, Management Agents (O/As) and residents of HUD Multifamily insured and assisted properties to remind all parties of the importance of prevention, identification, and treatment of infestations in HUD-assisted and HUD-insured rental housing. The Department has received numerous inquiries and comments from the industry and HUD residents seeking clarification and information on appropriate steps to address infestations in Multifamily properties. This Notice provides information and references to best practices regarding the prevention and control of infestations. It also reaffirms existing program requirements with regard to infestations.

II. Background

Pursuant to 24 CFR Part 5, Subpart G, HUD housing must be decent, safe, sanitary and in good repair. Owners of HUD-insured or assisted housing must maintain such housing in a manner that meets physical condition standards. In accordance with project Regulatory Agreements and Section 8 HAP Contracts, the housing must have no evidence of infestation. HUD monitors Owners and Agents (O/As) to ensure that housing meets physical condition standards enumerated in 24 CFR 5.703. This includes providing guidance aimed at preventing and addressing infestations.

Many residents and O/As have contacted HUD to seek guidance on infestations. Of particular concern is the growing problem of bed bugs. According to the United States Environmental Protection Agency (EPA), bed bug populations have recently increased dramatically. HUD is working closely with other federal agencies to develop and share best practices for preventing, identifying and controlling bed bugs.

III. Applicability

This Notice provides guidance to the following types of projects:

- A. Properties assisted with Section 8 Project Based Rental Assistance, Rent Supplement or Rental Assistance Payment (RAP) contracts.
- B. Properties with active Section 202 Direct Loans, Section 202/162, Section 202 and 811 Capital Advances, and Section 202 Senior Preservation Rental Assistance Contracts or Section 811 Project Rental Assistance demonstration funding.
- C. Properties with active FHA insured first mortgages under Sections 207 pursuant to 223(f), 221(d)(3), 221(d)(4), 221(d)(5), 231, 213 or 236.

Certain provisions of this Notice are applicable only to assisted properties, as specified in various sections of the Notice below. The Notice does not supersede existing lease provisions that comply with state and/or local landlord/tenant laws and that have been approved by HUD (where such approval is required).¹ All parties should refer to the property lease executed between the tenant and the O/A, and the property House Rules, for details on Owner and resident rights and responsibilities related to infestations and housing physical condition standards. Certain assisted properties² are also subject to provisions of the HUD Model Lease for Subsidized Programs (Family Model Lease) (Form HUD-90105-A, HUD-90105-B, HUD 90105-C and HUD-90105-D) in HUD Handbook 4350.3, *Occupancy Requirements of Subsidized Multifamily Housing Programs*.

IV. Prevention of Bed Bug Infestations

Of particular concern for Multifamily O/As, as well as project residents, is the resurgence of bed bugs, which can cause discomfort and anxiety for residents and which can spread quickly. The ideal approach to bed bug infestations is to prevent them from occurring in the first place. Federal agencies, such as EPA and HUD, are working in tandem to develop and share recommendations to prevent infestations.

¹ For unassisted O/As, this Notice does not supersede state and local landlord/tenant law related to lease enforcement, housing habitability, and cure rights or damages.

² Section 221(d)(3) BMIR, Section 236, Section 8 New Construction, Section 8 Substantial Rehabilitation, Section 8 State Agency, RHS 515 with Section 8, Section 8 Loan Management Set-Aside (LMSA), Section 8 Property Disposition Set-Aside (PDSA), Rental Assistant Payment (RAP), and Rent Supplement projects are subject to the provisions of the Family Model Lease.

HUD encourages Multifamily O/As to develop an Integrated Pest Management Plan (IPM) to focus on preventing infestations. Such plans describe the ongoing efforts the property management will take to prevent and respond to pests. For more detail on IPMs generally, please see the online guide at <http://www.stoppests.org>. The information below pertains specifically to bed bug infestations.

According to the EPA, principles of IPM for bed bugs include:

- Raising awareness through education on prevention of bed bugs;
- Inspecting infested areas, plus surrounding living spaces;
- Checking for infestations on luggage and clothes when returning home from a trip;
- Reducing the number of secondhand items brought into units and looking for bed bugs or signs of infestation on secondhand items before bringing the items home;
- Correctly identifying the pest;
- Keeping records – including dates when and locations where pests are found;
- Cleaning all items within a bed bug infested living area;
- Reducing clutter where bed bugs can hide;
- Eliminating bed bug habitats;
- Physically removing bed bugs through cleaning;
- Using pesticides carefully according to the label directions; and,
- Following up on inspections and possible treatments.

In addition to or as part of an IPM program, Multifamily O/As are strongly encouraged to take the following steps to prevent bed bugs:

- Provide training for staff to identify bed bugs, and to perform ongoing prevention actions as outlined in the IPM. When a community is at high risk for bed bugs (for example, if the community has experienced prior infestations), periodic building inspections are recommended.
- Actively engage residents in efforts to prevent bed bugs. Education and involvement of project residents is a critical component of IPM for bed bugs. Bed bugs may often go undetected and unreported, because they are active at night, and tenants may not be aware of their presence. O/As may wish to hold workshops for tenants to teach them to identify bed bugs, to create unfriendly environments for pests, and to report suspicions of bed bugs as soon as possible.
- Provide orientation for new tenants and staff, and post signs and handouts.

In addition, tenants should immediately report the suspicion of infestations in housing units or other areas of the property. Early reporting allows the pests to be identified and treated before the infestation spreads. Tenants are the first line of defense against infestations and should cooperate to create living environments that deter pests. This includes reducing unreasonable amounts of clutter that create hiding places for pests and deter treatment.

More information on bed bug prevention may be found by accessing the following websites:³

- **Healthy Homes Training:** *What's Working for Bed Bug Control in Multifamily Housing?: Reconciling best practices with research and the realities of implementation.* http://www.healthyhomestraining.org/ipm/NCHH_Bed_Bug_Control_2-12-10.pdf.
- **National Pest Management Association Bed Bug Hub:** <http://pestworld.org/pest-world-blog/the-bed-bug-hub-one-stop-shop-for-bed-bug-information>
- **National Pest Management Association Best Practices Website:** <http://www.bedbugbmps.org>
- **IPM Curriculum and Blog:** <http://www.stoppests.org>
- **Environmental Protection Agency:** <http://www.epa.gov/pesticides/bedbugs/>

V. Addressing Infestations

The O/A should respond with urgency to tenant reports of infestations. The O/A should endeavor to take appropriate action within a reasonable time period. However, tenants are advised that pest inspections and, if necessary, treatment, may take time to schedule, particularly for recently resurgent pests such as bed bugs, for which it may be difficult to find trained specialists to perform inspections and conduct treatments.

Residents should fully cooperate with the O/A's efforts to identify and address infestations. This tenant cooperation is shown to expedite the control of infestations. Cooperation includes allowing the O/A to enter the unit to perform inspections and treatments, allowing pest treatments to occur, following the pest treatment protocol, and removing infested furniture or other items from common areas such as hallways or community rooms.

Residents are advised that some infestations, including bed bugs, require multiple treatments over the course of several weeks. Generally, relocation from units is not necessary for effective pest treatment. However, if reasonable temporary relocation is necessary, the O/A may request withdrawals from available project funds (which may include Reserve for Replacement, project income, or Residual Receipts, if authorized by HUD), as described below in Section VI, for those days when treatment is actively occurring that may render the unit uninhabitable. All withdrawals of this type must be approved by the Hub/PC Director or designee. Any temporary relocation must be carried out in accordance with applicable civil rights laws, including, but not limited to, Title VI

³ An additional resource for interested parties is the *Bed Bug Handbook*. L.J. Pinto, R. Cooper, and S.K. Kraft, *Bed Bug Handbook: The Complete Guide to Bed Bugs and Their Control* (Mechanicsville, MD: S.K. Pinto & Associates, 2007).

of the Civil Right Act of 1964 and Section 504 of the Rehabilitation Act of 1973. For example, when persons with disabilities are temporarily relocated, they must be placed in housing that provides, at a minimum, the same accessibility features as the housing in which they currently reside. Additionally, the O/A must ensure the right of return for tenants who have had to be temporarily relocated while the treatment is being performed.

VI. Project Resources

An O/A may contact HUD to request project resources for control of infestations. An O/A may use available operating funds to pay for activities to prevent and/or treat infestations. When other sources of funds are not available or sufficient, the Hub/PC Director may honor requests to reimburse Owners for infestation treatment from the Reserve for Replacement account, or, if authorized, the Residual Receipts account. The releases should follow the processes outlined in HUD Handbook 4350.1, *Multifamily Project Servicing*, Chapters 4 and 25. Owners may make advances (loan without interest) when no reserves are available. With prior HUD approval, Owners may repay the advances from project resources as discussed in HUD Handbook 4350.1.

For assisted housing projects, HUD may consider use of rental assistance to pay reasonable and necessary project expenses, such as an increased pest control line item in the project's operating budget, if the Section 8 Housing Assistance Payments (HAP) contract allows for budget-based rent setting in accordance with the *Section 8 Renewal Policy Guide*.

Owners of assisted properties are advised that any rental assistance received under Section 8, Rent Supplement or RAP cannot be used to reimburse residents for the cost of any additional expense to the household, such as purchase of new furniture, clothing or cleaning services. Assisted project Owners' requests for tenants to pay the costs of infestation treatment must be in accordance with the provision for tenant payment of damages or noncompliance as required in the Family Model Lease.

VII. Recurring Infestations

Many properties face recurring infestations. O/As may take initiative to offer protective tools to residents to help safeguard properties from recurrences. To prevent pests from entering a Multifamily property, O/As may voluntarily offer to inspect tenants' furniture before move-in. Where there is an approved (for Assisted Owners) lease provision that complies with state and/or local landlord/tenant law, O/As may require appropriate treatment of furniture upon tenant move-in, or when a tenant moves furniture into the apartment. These services or products are to be offered at the Owner's expense, or may be paid from project operating funds if available.

All Owners (of assisted and unassisted properties) may pursue remedies provided in the lease agreement and in accordance with state and local rental law. Assisted Owners must follow additional guidelines including occupancy requirements for assisted housing, and must adhere to all HUD and state and local landlord/tenant laws before taking action to deny tenancy or remove residents for causes related to infestations. For O/As of assisted properties, the Family Model Lease provides remedies related to damages or noncompliance. Many O/As have proposed lease addenda

related to infestations. As detailed in HUD Handbook 4350.3, Section 6-9, Lease Addenda in assisted properties may not conflict with the Family Model Lease. HUD reserves the right to review and approve Lease Addenda for assisted properties, for example to ensure that tenant payment provisions in proposed Addenda do not exceed the remedies for damages or noncompliance provided in the Family Model Lease.

VIII. Responding to Inspection Findings

Infestations should be addressed when reported by staff, tenants or the Real Estate Assessment Center (REAC), or if an audit by the HUD Office of the Inspector General identifies possible infestation.

Presently, REAC inspectors will only deduct points if there is the ~~presence~~ of rats, or severe infestation by mice or insects such as roaches or termites. The following deficiencies can be noted: 1) Insects and 2) Rats/Mice/Vermin.”⁴ If there is no evidence of infestation (i.e. there are baits, traps, and sticky boards with no presence of insects or vermin) inspectors are instructed not to record this as a deficiency. If evidence is identified, the infestation may be cited as a deficiency.

As per Inspector Notice No. 2010-01, ~~the presence and/or treatment of bed bugs will not be scored in the UPCS inspection.”~~ However, inspectors now ask the O/A to identify any units and/or buildings that are infested before the inspection begins. If bed bugs are reported, the inspector will record the units and/or buildings affected in the comment section of the Physical Inspection report.

Because bed bug infestations are on the rise, HUD staff will take additional steps to monitor and track reports of bed bug infestation and treatments of such infestations. When bed bugs are reported by the Owner/Agent at the time of inspection or if the Inspector notes the presence of bed bugs, REAC sends a ~~“Bed Bugs Reported”~~ email to the Hub/Program Center Director. HUD staff must take the following steps upon receipt of the ~~“Bed Bugs Reported”~~ email from REAC (regardless of the PASS score the property receives) or if bed bugs are cited as a deficiency within the REAC report, or if bed bugs are reported by the O/A, project residents, the Performance Based Contract Administrator, or an OIG audit:

- Enter the bed bug information on the Problem Statement screen in the Integrated Real Estate Management System (iREMS).
- If bed bugs were identified by REAC, send the attached letter (Attachment 1) to the Owner regardless of the score of the REAC Physical Inspection.
- Advise the Owner to describe what actions were taken or will be taken to eradicate the infestation.
- Advise the Owner to inform HUD of the response to the infestation, and to inform HUD if and when the problem has been completely eradicated.

⁴ HUD Physical Inspection Program—Chapter 3: UPCS Definitions Training—Health & Safety

- Release funds from Reserve for Replacement or Residual Receipts accounts if requested and if such funds are available and authorized.
- Continue to enter all related information into the Problem Statement screen in iREMS; and,
- Report any significant developments or problems regarding a bed bug infestation to Headquarters, Office of Asset Management.

If you have questions, please contact your Desk Officer in the Office of Asset Management.

Carol J. Galante
Acting Assistant Secretary for Housing –
Federal Housing Commissioner

Enclosures

ATTACHMENT

Property Owner
Address

SUBJECT: Bed Bugs
Property Name: _____

Dear Owner:

The [Hub Name] Multifamily Hub has received notification from the Real Estate Assessment Center (REAC) that during the physical inspection of your property performed on [Date], the inspector indicated that bed bugs were reported present at the property. The units/buildings below were identified as being infested with bed bugs:

Within 5 days of the date of this letter, please inform your Project Manager of the actions you are taking for bed bug control. This information should include the method of treatment used (or to be used), the timing for treatment(s), and your proposed plan for monitoring and preventing the possibility of future infestation.

If you have any questions, please contact your Project Manager, [Project Manager's Name], at [Project Manager's Telephone Number] ext. [Extension]

Sincerely,

Supervisory Project Manager
Project Management Division



Joint Statement on Bed Bug Control in the United States from the U.S. Centers for Disease Control and Prevention (CDC) and the U.S. Environmental Protection Agency (EPA)

Introduction and Purpose

The Centers for Disease Control and Prevention (CDC) and the U.S. Environmental Protection Agency (EPA) developed this document to highlight emerging public health issues associated with bed bugs (*Cimex lectularius*) in communities throughout the United States.

Bed bugs (**Photo 1**) have been common in U.S. history. Although bed bug populations dropped dramatically during the mid-20th century (1), the United States is one of many countries now experiencing an alarming resurgence in the population of bed bugs. Though the exact cause is not known, experts suspect the resurgence is associated with increased resistance of bed bugs to available pesticides, greater international and domestic travel, lack of knowledge regarding control of bed bugs due to their

prolonged absence, and the continuing decline or elimination of effective vector/pest control programs at state and local public health agencies.

In recent years, public health agencies across the country have been overwhelmed by complaints about bed bugs. An integrated approach to bed bug control involving federal, state, tribal and local public health professionals, together with pest management professionals, housing authorities and private citizens, will promote development and understanding of the best methods for managing and controlling bed bugs and preventing future infestations. Research, training and public education are critical to an effective strategy for reducing public health issues associated with the resurgence of bed bug populations.

Impact of Bed Bugs on Public Health

Although bed bugs are not known to transmit disease, they are a pest of significant public health importance. Bed bugs fit into a category of blood-sucking ectoparasites (external parasites) similar to head lice (*Pediculus humanus capitis*). Bed bugs, like head lice, feed on the blood of humans but are not believed to transmit disease. Other ectoparasites, such as body lice (*Pediculus humanus corporis*), are known to transmit several serious diseases. Differences in the biology of similar species of pests, such as body lice and head lice (or bed bugs) can greatly impact the ability of pests to transmit disease.



Photo 1. Bed Bug. Photo courtesy of Dr. Harold Harlan, Armed Forces Pest Management Board Image Library

Bed bugs cause a variety of negative physical health, mental health and economic consequences. Many people have mild to severe allergic reaction to the bites with effects ranging from no reaction to a small bite mark to, in rare cases, anaphylaxis (severe, whole-body reaction) (2). These bites (**Photo 2**) can also lead to secondary infections of the skin such as impetigo, ecthyma, and lymphangitis (3,4). Bed bugs may also affect the mental health of people living in infested homes. Reported effects include anxiety, insomnia and systemic reactions (1).



Photo 2. Skin Reaction to Bed Bug bites. Photo courtesy of Dr. Harold Harlan

Research on the public health effects of bed bugs has been very limited over the past several decades, largely due to the noted decline in bed bug populations in the latter half of the 20th century. Now that bed bug populations are rapidly increasing, additional research is needed to determine the reasons for the resurgence, the potential for bed bugs to transmit disease and their impact on public health.

Economically, bed bug infestations are also a burden on society. Although the exact dollar amount is not known, the economic losses from health care, lost wages, lost revenue and reduced productivity can be substantial. The cost of effectively eliminating bed bugs may be significantly more than the cost of eliminating other pests because bed bug control usually requires multiple visits by a licensed pest control operator and diligence on the part of those who are experiencing the infestation. Control in multi-family homes is much more difficult than in single family homes because bed bugs frequently travel between units, either by direct transport by humans or through voids in the walls. There are additional costs and complexities associated with coordinating and encouraging participation from multiple residents.

When a community starts to experience bed bug infestations, control is often more challenging because:

- Local public health departments have very limited resources to combat this problem and bed bugs frequently are not seen as a priority.
- Municipal codes struggle to identify those responsible for control of bed bug infestations. Tenants and landlords often dispute who is ultimately responsible for the cost of control and treatment. Treatment costs are high and transient populations make it difficult or impossible to assign responsibility.
- Pesticide resistance and limited control choices make treatment even more difficult. Some bed bug populations are resistant to almost all pesticides registered to treat them. Residents may use over-the-counter or homemade preparations that are ineffective (or even dangerous) and may promote further resistance.
- Pesticide misuse is also a potential public health concern. Because bed bug infestations are so difficult to control and are such a challenge to mental and economic health, residents may resort to using pesticides that are not intended for indoor residential use and may face serious health risks as a result. Additionally, residents may be tempted to apply pesticides registered for indoor use, but at greater application rates than the label allows. This results in a much greater risk of pesticide exposure for those living in the home. Pesticides must

always be used in strict accordance with their labeling to ensure that the residents and applicators are not exposed to unsafe levels of pesticide residues.

Bed Bug Biology

Bed bugs are small, flat insects that feed on the blood of sleeping people and animals. They are reddish-brown in color, wingless, and range from 1 to 7 millimeters in length. They can live several months without a blood meal.

Infestations of these insects usually occur around or near the areas where people sleep or spend a significant period of time. These areas include apartments, shelters, rooming houses, hotels, nursing homes, hospitals, cruise ships, buses, trains, and dorm rooms.

Bed bugs are experts at hiding. They hide during the day in places such as seams of mattresses, box springs, bed frames, headboards, dresser tables, cracks or crevices, behind wallpaper, and under any clutter or objects around a bed. Their small flat bodies allow them to fit into the smallest of spaces and they can remain in place for long periods of time, even without a blood meal. Bed bugs can travel over 100 feet in one night, but they tend to live within 8 feet of where people sleep.

Bed bugs are usually transported from place to place as people travel. Bed bugs travel in the seams and folds of luggage, overnight bags, folded clothes, bedding, furniture, and anywhere else where they can hide. Most people do not realize they can transport stow-away bed bugs as they travel potentially infesting new areas, including their homes, as they relocate.

One of the easiest ways to identify a bed bug infestation is by bite marks that appear on the face, neck, arms, hands, and any other body parts. However, these bite marks may take as long as 14 days to develop in some people so it is important to look for other clues when determining if bed bugs have infested an area. These signs may include the exoskeletons (**Photo 3**) of bed bugs after molting, bed bugs in the fold of mattresses and sheets, a sweet musty odor, and rusty-colored blood spots from their blood-filled fecal material that is often excreted on the mattress or nearby furniture.



Photo 3. Bed Bug Exoskeletons. Photo courtesy of Dr. Harold Harlan, Armed Forces Pest Management Board Image Library

When bed bugs bite, they inject an anesthetic and an anticoagulant that prevents a person from feeling the bite. Because bites usually occur while people are sleeping, most people do not realize they have been bitten until marks appear. The bite marks are similar to that of a mosquito or a flea - a slightly swollen and red area that may itch and be irritating. The bite marks may be random or appear in a straight line. Other symptoms of bed bug bites include insomnia, anxiety, and skin problems that arise from profuse scratching of the bites.

Everyone is at risk for bed bugs bites when visiting an infested area. However, anyone who travels frequently and shares living and sleeping quarters where other people have previously slept has an increased risk for being bitten and for spreading a bed bug infestation.

Integrated Pest Management for Bed Bugs

The current national problem with bed bugs is likely due to the convergence of three human behaviors: lack of awareness of the historical and biological link humans have with bed bugs, increased international travel, and past over-reliance on pesticides. Bed bugs are a “nest parasite” that resides in the human nest – the bedroom. Over time, bed bugs have evolved to develop resistance to many of the chemical pesticides currently used. In fact, bed bugs were widely resistant to DDT by the mid-1950s (5).

Integrated pest management (IPM) is an effective and environmentally sensitive approach to pest management that relies on a combination of common-sense practices. IPM programs use current, comprehensive information on the life cycles of pests and their interaction with people and the environment. This information, in combination with available pest control methods, is used to manage pest damage by the most economical means, and with the least possible hazard to people, property, and the environment.

Bed bug control is most effective when an IPM approach is implemented with diligent participation by the residents. In multi-family housing, diligent participation is also required of the building management. IPM takes advantage of all appropriate pest management options, including the judicious use of pesticides. Although bed bugs may sometimes be controlled by non-chemical means alone, this approach is often very difficult, potentially less effective, and usually more resource intensive. A comprehensive IPM program to control bed bugs may include a number of methods such as:

- using monitoring devices,
- removing clutter where bed bugs can hide,
- applying heat treatment,
- vacuuming,
- sealing cracks and crevices to remove hiding places,
- using non-chemical pesticides (such as diatomaceous earth) and
- judicious use of effective chemical pesticides

A coordinated community IPM program can alleviate both the discomfort and cost of managing bed bugs. The underlying philosophy of bed bug IPM is based on the fact that bed bug infestations will not go away without intervention. Intervention is most effective when populations are low. Such a coordinated effort could create a partnership among government, property managers, citizens, and pest management professionals to ensure an effective intervention facilitated by environmental health professionals. EPA and CDC recommend that pest management and environmental health professionals throughout the U.S. continue to use IPM strategies as they address the bed bug issue.

The Role of Government Agencies and the Public in Bed Bug Control

CDC, EPA, and other federal agencies are working closely with state, tribal and local health departments, academia and private industries to monitor and better understand the recent resurgence of bed bugs in communities throughout the United States. CDC and EPA are facilitating communications and working to expand the knowledge base among agencies and programs that may have a role in reducing bed bug populations. The two agencies are also fostering cooperation with the private sector and the public to encourage their help with this endeavor.

CDC is partnering with experts in the areas of medicine, entomology, epidemiology and environmental toxicology to better understand the resurgence of bed bugs and the methods and tools that are needed for effective bed bug control. CDC will provide timely information on emerging trends in bed bug control with the goal of developing national strategies to reduce bed bug populations. CDC recognizes that very limited research has been conducted on bed bugs during the past several decades and encourages increased bed bug research to determine the causes of the resurgence, the most effective methods of control and the potential for bed bugs to transmit disease.

EPA's primary responsibility is the dual statutory charges to ensure that the pesticides with public health uses are (1) safe and (2) effective against the pests on their labels. EPA carries out this responsibility by conducting rigorous scientific screening of pesticides and imposing limits through registration of pesticides to ensure that when used to control pests, they do not harm people or the environment.

EPA is working to ensure that pest management professionals and the public have access to the latest information on effective bed bug control tools. EPA realizes that certain bed bug populations in communities across the nation are becoming increasingly resistant to many of the existing pesticides. EPA is actively working with industry and researchers to identify new compounds (or new uses of existing compounds) to control bed bugs. In addition, EPA is working to educate the general public, pest professionals, and public health officials about bed bug biology and IPM, which is critical to long-term bed bug control.

Other federal agencies are also involved in research and education about bed bugs. For example, the U.S. Department of Housing and Urban Development (HUD) is funding research on bed bug monitoring and control in low-income, multi-family housing, along with educating public housing authorities and other housing industry groups about bed bug identification and control. Health departments can use local HUD field office personnel or local housing officials as resources when addressing bed bug issues in multi-family housing.

State, tribal, and local government agencies and health departments play a critical role in protecting the public from bed bugs. Public health departments serve on the front lines, providing information on prevention and control of bed bugs through various programs to the public and private sector.

The public, together with their local health agencies, must be involved in the control and management of bed bug populations and must be provided with the knowledge of best practices to prevent and control bed bug infestations. In some cases, a coordinated community control program may be necessary to reduce or eliminate bed bug populations.

Additional Information

For additional information about bed bugs and their control, please see the following print references:

- Cooper RA, Harlan HJ. Ectoparasites, part three: bed bugs and kissing bugs. In: Mallis A, Hedges SA, Moreland D, editors. Handbook of pest control, ninth edition. Richfield, OH: GIE Media, Inc.; 2004. p. 495-529.
- Harlan HJ, Faulde MK, Bauman GJ. Bedbugs. In: Bonnefoy X, Kampen H, Sweeney K, editors. Public health significance of urban pests. Copenhagen: World Health Organization; 2008. p. 131-53.
- Miller DM. Bed bugs (Insecta: Hemiptera: Cimicidae: Cimex spp.). In: Capinera J, editor. Encyclopedia of entomology. Dordrecht, Netherlands: Kluwer Academic Press Springer; 2008. p. 405-17.
- Usinger RL. Monograph of Cimicidae. Lanham, MD: The Entomological Society of America; 1966.

For additional information about bed bugs and their control, please see the following Web sites:

- U.S. Environmental Protection Agency:
<http://epa.gov/pesticides/controlling/bedbugs.html>
- Centers for Disease Control and Prevention:
<http://www.cdc.gov/nceh/ehs/Topics/bedbugs.htm>
- Bed Bug Hotel Safety:
<http://www.oregon.gov/DHS/ph/pl/docs/bedbughotel.pdf>
- Central Ohio Bed Bug Task Force Information: <http://centralohiobedbugs.org/>
- Cornell Bed Bug Guide:
http://www.nysipm.cornell.edu/publications/bb_guidelines/
- Harvard School Public Health Bed Bug Management:
<http://www.hsph.harvard.edu/bedbugs/>
- National Pest Management Association: <http://www.pestworld.org/for-consumers/pest-frequently-asked-questions/bedbug-faq>
- National Pesticides Information Center: <http://npic.orst.edu/pest/bedbug.html>
- New Jersey Bed Bug Fact Sheet:
<http://www.nj.gov/health/eoh/phss/documents/bedbugfactsheet.pdf>
- University of Kentucky Bed Bug Fact Sheet:
<http://www.ca.uky.edu/entomology/entfacts/entfactpdf/ef636.pdf>
- University of Minnesota Bed Bug Information for Travelers:
<http://www.extension.umn.edu/distribution/housingandclothing/M1196.html>

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1. Anderson A, Leffler K. Bed bug infestation in the news: a picture of an emerging public health problem in the United States. *Journal of Environmental Health*. 2008;70(9):24-7, 52-3.
2. Thomas I, Kihiczak GC, Schwartz RA. Bed bug bites: a review. *International Journal of Dermatology*, 2004;43:430-3.
3. MedlinePlus [Internet]. Bethesda (MD): National Library of Medicine (US); [updated 2010 Feb 17]. Impetigo; [updated 2010 Jan 12; cited 2010 Feb 17]. Available from <http://www.nlm.nih.gov/medlineplus/impetigo.html>.
4. Burnett JW, Calton GJ, Morgan RJ. Bed bugs. *Cutis* 1986;38(1):20.
5. Pinto LJ, Cooper RA, Kraft SK. *Bed bug handbook: the complete guide to bed bugs and their control*. Mechanicsville, MD: Pinto and Associates, Inc.; 2007.

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