



National Center for Healthy Housing

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

The National Center for Healthy Housing has identified five different, complementary regulatory approaches that have been 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 on page 4 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). The IPMC 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 on page 9 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 on page 14 for more information on the APHA model health/sanitation code.

Building a lead-safe and healthy home environment for all children

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See www.healthyhomestraining.org

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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-one states have adopted URLTA. See Part D on page 19 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 on page 23 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 on page 25 for more information on federal hazard management laws. See Part G on page 28 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 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	<ul style="list-style-type: none"> • Part A: Housing Quality Standards – Page 4 • Part B : IPMC – Page 9 	<ul style="list-style-type: none"> • Part C: for American Public Health (APHA) Association 1938 Principles – Page 14 	<ul style="list-style-type: none"> • Part D: URLTA – Page 19 	<ul style="list-style-type: none"> • Part E – Page 23 	<ul style="list-style-type: none"> • Part F – Page 25 • Part G: EPA’s Renovation, Repair and Painting Rule – Page 27

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 Principles)⁷

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 2008, URLTA has been adopted by 21 states¹¹:

Alabama	Kansas	Oklahoma
Alaska	Kentucky	Oregon
Arizona	Michigan	Rhode Island
Connecticut	Mississippi	South Carolina
Florida	Montana	Tennessee
Hawaii	Nebraska	Virginia
Iowa	New Mexico	Washington

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 www.nccusl.org/Update/uniformact_factsheets/uniformacts-fs-urlta.asp.

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 Renovation, Repair and Painting Rule

Scope of Rule:

Renovation, repair and painting activities on **target housing** or **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 any one or more children age 6 years or under resides or is expected to reside in such housing for the elderly or persons with disabilities); or
 - Any 0-bedroom dwelling.
- **Child-Occupied Facility:** Building, or portion of a building, constructed prior to 1978, visited regularly by the same child, under 6 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 3 hours and the combined weekly visits last at least 6 hours, and 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 6.

Activities Exempt from Compliance with the Requirements:

- **Abatement:** Activities conducted under abatement rules by certified abatement contractor.
- **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.But 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
 - Proper use of EPA-recognized test kit by certified renovator. *Note that person contracting for the renovation must be informed of results by certified renovator within 30 days after renovation complete.*
- **Do-It-Yourself:** Work performed by owners themselves in their residence.

**EPA'S RRP RULE DOES NOT PREEMPT MORE STRINGENT REQUIREMENTS
SUCH AS THOSE BY HUD, STATES OR COMMUNITIES**

Limits on Scope of Rule:

- **Owner-Occupied Target Housing:** Exempt from training and work practice requirements if owner signs written statement that all apply:
 - No child under age 6 resides there. Resides means:
 - Primary residence of custodial parents, legal guardians, and foster parents; or
 - Informal caretaker’s residence where child lives and sleeps most of the time.
 - No pregnant woman resides there; and
 - Not child-occupied facility.
- **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 still required. An emergency renovation is one that:
 - Is a sudden, unexpected event
 - 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.

Deadlines in EPA’s Renovation, Repair and Painting Rule

Deadlines	6/21/08	12/22/08	4/22/09	10/22/09	4/22/10
Training Firms			May apply for EPA accreditation		Full Compliance Required
Renovation Firms				May apply for EPA certification	
Certified Renovators (Individuals)	Stop claims of training for EPA certification as renovator or dust sampling technician without accreditation.*				
New <i>Renovate Right</i> pamphlet		New pamphlet must be used**			
EPA-Recognized Test Kits	EPA recognizes negative tests				

* People can continue offering and taking the HUD- and EPA-approved, eight-hour, lead-safe work practices course. People who take or have taken this course will only need to take the four-hour, certified renovator refresher course instead of the eight-hour, certified renovator initial training course.

** Go to www.epa.gov/lead/pubs/renovation.htm to download a copy of the new “*Renovate Right: Important Lead Hazard Information for Families, Child Care Providers and Schools*” pamphlet.

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. 		
<p>¹ EPA's new "<i>Renovate Right: Important Lead Hazard Information for Families, Child Care Providers and Schools.</i>" The existing "<i>Protect Your Family from Lead in Your Home</i>" pamphlet can be used before 12/22/08.</p> <p>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.</p> <p>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.</p> <p>⁴ Notice must describe: general nature and locations of the planned renovation activities; the expected starting and ending dates; statement of how occupant can get pamphlet at no charge from renovation firm.</p> <p>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.</p> <p>⁶ Signs must describe general nature and locations of the renovation and the anticipated completion date.</p>			

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		
• Where to post signs?	At perimeter of work area	
• 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.	
• What language?	Primary language of occupants to extent practicable	
• When to post signs?	Before beginning renovation until after post-renovation cleaning verification is completed.	
Containing the Work Area		
• Isolate work area.	Take steps necessary to ensure no dust or debris leaves work area while renovation is being performed.	
• Maintain integrity of containment.	Ensure plastic and other impermeable materials are not torn or displaced.	
• Emergency exit	Ensure containment installed so that it does not interfere with occupant and worker egress in an emergency.	
Preparing the Work Area		
• Objects in Work Area	Remove or cover with impermeable material with all seams and edges sealed.	<i>Not Required</i>
• Ducts Opening in Work Area	Close and cover all ducts with impermeable material.	<i>Not Required</i>
• 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.
• Access Doors	If door is used while job is being performed, allow workers to pass through while confining dust and debris to work area.	
• 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.
• Tools	Ensure all personnel, tools, waste containers and other items are free of dust and debris before leaving the work area.	<i>Not Required</i>
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		

Required Work Practices for Renovations
40 CFR 745.85

	Interior Renovations	Exterior Renovations
• 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	
• 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.	
• Transporting Waste	Contain waste to prevent release of dust and debris.	
Cleaning the Work Area		
• Paint Chips & Debris	Collect and, without dispersing any of it, seal this material in a heavy-duty bag.	
• 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.	
• General	Clean all objects and surfaces in work area and 2' outside work area cleaning from higher to lower	
• Walls	Use HEPA vacuum ¹ or wiping with a damp cloth	
• Carpets and Rugs	Thoroughly vacuum with a HEPA vacuum ¹ equipped with a beater bar.	
• Remaining Surfaces	Thoroughly vacuum remaining surfaces and objects with a HEPA vacuum. ¹	
• Final Cleaning – Other Than Floors	Wipe remaining surfaces and objects, except for carpeted or upholstered surfaces, with a damp cloth.	
• 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>	
¹ "HEPA vacuum" means a vacuum cleaner which has been designed with a high-efficiency particulate (HEPA) filter as the last filtration stage. A HEPA filter is a filter that 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. 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.		

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>Permissible alternative to the steps below. Work area must meet EPA clearance standards.</i>	
Certified Renovator must personally perform all cleaning verification except recleaning. ¹	Required	
Step 1: Visually inspect work area for dust, debris, and residue.	Required	
Step 2: If failed visual, have it recleaned. ¹	Required	
Step 3: Wipe with wet disposable cleaning cloth. ²	Required. Cloth must be damp to touch.	Required. Cloth must be damp when used. One cloth per 40 square feet.
Step 4: Compare to cleaning verification card. ³ If lighter than card, then work passes.	Required.	
Step 5: If failed, have it recleaned. ¹	Required if failed 1 st wipe.	
Step 6: Wipe surface again with new wet disposable cleaning cloth. ²	Required if failed 1 st wipe. Can use clean surface of used wipe.	Required if failed 1 st wipe.
Step 7: Compare to card. If lighter than card, then work passes.	Required if failed 1 st wipe.	
Step 8: If failed, wait one hour or until dried completely whichever is longer.	Required if failed 2 nd wipe.	
Step 9: Wipe with dry, disposable cleaning cloth. ⁴ The work passes.	Required if failed 2 nd wipe. Passes even if darker than card.	
Notice to owner or occupant.	<i>None required.</i>	
¹ "Recleaning" means: 1) 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. 2) Wipe all remaining surfaces and objects in the work area, except for carpeted or upholstered surfaces, with a damp cloth. 3) 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 "Wet disposable cleaning cloth" means a commercially-available, premoistened, white disposable cloth designed to be used for cleaning hard surfaces. ³ "Cleaning verification card" 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 "Dry disposable cleaning cloth" means a commercially-available, dry, electrostatically-charged, white disposable cloth designed to be used for cleaning hard surfaces.		



**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; Housing Choice Voucher/Section 8 Public Housing Agencies; Tribally Designated Housing Entities; Indian Tribes; Resident Management Corporations.

NOTICE PIH 2007-12 (HA)

Issued: May 24, 2007

Expires: May 31, 2008

Cross Reference:

24 CFR 903.7(e)(2)

**This Notice Supersedes Notice
PIH-2006-11 (HA)**

Subject: Guidance on Integrated Pest Management

1. **PURPOSE:** The purpose of this Notice is to inform public housing agencies (PHAs) and Tribally Designated Housing Entities (TDHEs) to reference materials on Integrated Pest Management (IPM) located in Maintenance Guidebook Seven: Termite, Insect and Rodent Control and reference material located at paragraph 7 of this notice. PHAs and TDHEs (HAs) may choose to share this information with families and property owners participating in their programs.
2. **APPLICABILITY:** The information in this Notice may be of interest to HAs, property owners, property managers, and family program participants when they review their pest control efforts. The decision to reflect IPM processes in their ongoing pest control efforts rests solely on local management. The use of this material is voluntary for the HAs; however, HUD promotes the use of IPM for pest control.
3. **BACKGROUND:** The goal of IPM (per the Environmental Protection Agency) is to manage pest damage by the most economical means, and with the least possible hazard to people, property, and the environment. To undertake IPM, property managers should be committed to ongoing or continuous monitoring and record keeping, education of residents and staff, and good communication between residents and building managers. IPM methods involve restricted access to food/water, sanitation and waste management, mechanical control, natural control agents, physical barriers, structural maintenance, and, where necessary, conservative application of pesticides.

HUD has supported IPM for more than two decades and published and distributed Maintenance Guidebook Seven: Termite, Insect, and Rodent Control, to all PHAs in 1995. Some HAs use the IPM approach to pest management and have seen it dramatically reduce both pest populations and pesticide use. IPM programs have also positively engaged residents through the outreach and education needed to prepare them for their role in implementing IPM.

4. DEFINITION: IPM efforts involve HA staff, contractors, and residents, and include:
- a. Communicating the HA's IPM policies and procedures to all building occupants, administrative staff, maintenance personnel, and contractors.
 - b. Identifying (1) pests and (2) environmental conditions that limit the spread of pests, including the presence of pests' natural enemies.
 - c. Establishing an ongoing monitoring and record keeping system for regular sampling and assessment of pests, surveillance techniques, and remedial actions taken, including establishing the assessment criteria for program effectiveness.
 - d. Determining, with involvement of residents, the pest population levels – by species – that will be tolerated, and setting action thresholds at which pest populations warrant action.
 - e. Improving sanitation, waste management, mechanical pest management methods, and/or natural control agents that have been carefully selected as appropriate in light of allergies or cultural preferences of staff or residents.
 - f. Monitoring and maintaining structures and grounds (e.g., sealing cracks, eliminating moisture intrusion/accumulation) and adding physical barriers to pest entry and movement.
 - g. Developing an outreach/educational program and ensuring that leases reflect residents' responsibilities for: (1) proper housekeeping, (2) reporting presence of pests, leaks, and mold, and (3) cooperating with specific IPM requirements such as obtaining permission of HA management before purchasing or applying any pesticides.
 - h. Enforcing lease provisions regarding resident responsibilities such as housekeeping, sanitation, and trash removal and storage.
 - i. Using pesticides only when necessary, with preference for products that, while producing the desired level of effectiveness, pose the least harm to human health and the environment, and, as appropriate, notifying PHA management before application.
 - j. Providing and posting 'Pesticide Use Notification' signs or other warnings.
5. HEALTH AND COST CONCERNS: Pests may adversely impact health and contribute to worsening some diseases, such as allergies and asthma. Therefore, pest control methods are targeted to protecting the health of residents and staff. Even though applying pesticides may be effective in eliminating pest populations, many of these chemicals may be associated with health and/or environmental risks, and their use should be minimized if alternative methods exist. IPM frequently has proven to be more effective in reducing pest populations than depending solely on broadcasting pesticides. Therefore, IPM offers the potential of ensuring efficacy of pest elimination while protecting the health of residents and staff.

Most of the effective methods of pest elimination, including ongoing repairs, erection of barriers, and monitoring, will extend the useful life of the property and, thereby, generate significant savings that offset costs of the pest control operations. Many of these non-application methods, including structural maintenance, especially inspecting for and repairing leaking pipes and cracks in roofs, walls, and windows are effective in preventing moisture intrusion and accumulation. Additionally, IPM-conscious HAs assess the need to install physical barriers to both pest entry and pest movement within every structure.

6. IMPLEMENTATION: The choice of pest control strategies is the decision of HAs' property owners and managers. HAs may choose to implement IPM. This may be done to the extent, and in the manner, they determine best, at their discretion. If a HA uses an outside contractor for pest control, the HA's pest control/IPM policies and procedures should be incorporated into the specifications or statement of work for the pest management contract. The HA may also consider training for maintenance staff and education for residents as well as for HA administrative staff who oversee housing developments or administer occupancy and rental duties such as unit housekeeping inspections. If the HA uses its own maintenance staff for pest management, proper training in the HA's IPM procedures is essential. The contract administrator for any pest management contract should also be trained. Successful results rely upon proper implementation; training is therefore of the utmost importance. Not only must maintenance staff be trained, but also residents and their elected leaders. 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. HUD encourages HAs to partner with local pest management organizations.
7. REFERENCE MATERIALS FOR IMPLEMENTING IPM:
- a. PIH Maintenance Guidebook Seven – Termite, Insect & Rodent Control (September, 1995): http://hudclips.org/sub_nonhud/cgi/pdfforms/HUDGB7.pdf
 - b. PIH Notice 95-66: http://www.hudclips.org/sub_nonhud/cgi/pdfforms/HUDGB1N.pdf
 - c. General Services Administration
 - i. GSA Guidelines For Structural Pest Control Operations: http://schoolipm.ifas.ufl.edu/doc/bus_prac.html
 - ii. Integrated Pest Management Program - Contract Guide Specification (1999) <http://schoolipm.ifas.ufl.edu/doc/contract.pdf>
 - d. U.S. Environmental Protection Agency
 - i. General IPM information (for schools, but generally applicable to such other large buildings as multifamily 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>
 - e. U.S. Department of Defense - Armed Forces Pest Management Board Technical Guide No. 29 Integrated Pest Management (IPM) In And Around Buildings <http://www.afpmb.org/pubs/tims/tg29/tg29.htm>
 - f. Massachusetts Department Of Food And Agriculture Pesticide Bureau - Integrated Pest Management Kit For Building Managers: <http://www.pestinfo.ca/documents/IPMkitforbuildingmanagers.pdf>
 - g. Alliance for Healthy Homes http://www.afhh.org/dah/dah_pesticides.htm
 - h. Canada
 - i. University of Toronto, Integrated Pest Management in Housing, <http://www.utoronto.ca/forest/termite/IPMH.html>
 - ii. IPM Institute of North America - IPM Standards for Schools:
 - i. <http://www.ipminstitute.org/school.htm>
 - ii. http://www.ipminstitute.org/IPM_Star/ipmstar_profiles_monroe_county_in.htm
 - j. PHA RESOURCE
 - ii. HUD-funded "Healthy Public Housing Project" conducted by Harvard School of Public Health in Boston public housing <http://www.hsph.harvard.edu/hphi>

k. PHA Case Studies

iii. CUYAHOGA HOUSING AUTHORITY:

http://www.ehw.org/Asthma/ASTH_EPA_IPM_CaseStudy.pdf

iv. Boston Housing Authority:

<http://www.asthmaregionalcouncil.org/about/documents/IPMinMultifamilyHousing7.25.06.doc>

The above list of IPM practices does not constitute a HUD endorsement of any specific practice, but provides IPM ideas and practices that have reportedly been used to improve pest management while reducing unnecessary dependence on pesticides. HUD encourages PHAs/TDHEs to share their policies, procedures, resident leases, and written case studies so that these may be published on the HUD web for others to read.

For further information about this Notice, contact the nearest HUD Office of Public Housing within your state. Tribes and TDHE's 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/

Orlando J. Cabrera, Assistant Secretary for
Public and Indian Housing

Summary of National Green Building Programs

Enterprise Community Partners Green Communities Criteria

Green Communities is a major initiative led by Enterprise Community Partners (Enterprise). Established in September 2004, it is a five-year, \$555 million commitment to create more than 8,500 homes that deliver significant health, economic, and environmental benefits for low-income families and communities. The program establishes green building criteria and provides funding to assist developers in planning and construction. As of January 2008, Enterprise has invested over \$570 million in over 250 developments that will result in more than 11,000 homes that meet the Green Communities Criteria.



Projects developed under the criteria must satisfy all 40 mandatory elements and gain additional points (35 points for new construction or 30 for rehabilitation projects) from optional criteria. The criteria allow flexibility if a particular hardship is demonstrated and an alternative is proposed that meets the intent and accomplishes the same outcome as the criteria. Building projects that

conform to the criteria are eligible for grants, loans, and tax credit equity as incentives. This is currently the only national green building program that requires a minimum number of new homes or apartments to be dedicated to lower-income residents.

The criteria are divided into the following categories:

- Integrated Design Process
- Site, Location, and Neighborhood Fabric
- Site Improvements
- Water Conservation
- Energy Efficiency
- Materials Beneficial to the Environment
- Healthy Living Environment
- Operations and Maintenance

Optional criteria are available in Location and Neighborhood Fabric, Site Improvements, Energy Efficiency, Materials Beneficial to the Environment, and Healthy Living Environment. A review panel evaluates each project for grant approval. As part of the grant requirement, the grantee's architect and construction manager must self-certify compliance with the program criteria.

Mandatory Criteria: Yes, comprehensive

Third Party Certification: No

Building Performance Testing: Optional

Units Certified/Completed as of June 30, 2008: 11,970

www.greencommunitiesonline.org

US Green Building Council's Leadership in Energy and Environmental Design for Homes (LEED for Homes)

The U.S. Green Building Council (USGBC) administers the Leadership in Energy and Environmental Design (LEED) program. LEED for Homes is a voluntary initiative designed to actively promote the transformation of the mainstream home building industry toward more sustainable practices. The long-term goal is to recognize and reward the top 25% of new homes, in terms of environmental stewardship. LEED for Homes applies to market rate and affordable homes, as well single family and multifamily homes.

The program has completed its pilot phase and began its full program in 2008. The program includes mandatory and optional green construction practices in the following categories, for a total of 136 available points:

- Awareness and Education
- Location and Linkages
- Energy and Atmosphere
- Sustainable Sites
- Water Efficiency
- Indoor Environmental Quality
- Materials and Resources
- Innovation and Design Processes



Builders receive credits for achieving criterion in each of the eight criteria categories. LEED for Homes has several performance tiers termed Certified (45-59 points), Silver (60-74 points), Gold (75-89 points), and Platinum (90-136 points). The award level point thresholds are adjusted based on home size. A third-party Provider is responsible for determining the LEED for Homes score and the rating.

The costs of participation in the LEED for Homes Program are established by local or regional Providers plus a registration and certification fee to USGBC based on the number of homes or square footage of multifamily buildings (www.usgbc.org/DisplayPage.aspx?CMSPageID=147). The Provider is responsible for the third-party inspection and performance testing services. These verification and rating services generally require approximately 2 to 3 days per home. The costs vary depending on the size and location of the homes, and the number of green measures to be inspected and tested.

Mandatory Criteria: Yes, moderate

Third-Party Certification: Yes

Building Performance Testing: Yes

ICC-700-2008 National Green Building Standard

The National Association of Home Builders (NAHB), the International Code Council (ICC) and the NAHB Research Center initiated a process in 2007 for the development of a national standard for green home building construction practices beyond current rating systems, following the consensus process of the American National Standards Institute (ANSI). The standard, entitled the “ICC-700 National Green Building Standard (NGBS)” is a voluntary green home building standard that can be adopted by local green home building programs as a conformance guide for single-family, multi-family, remodeling, and site development projects.



The NGBS builds upon the NAHB Model Green Home Building Guidelines developed by the NAHB Research Center in 2004 (see NCHH’s 2006 Comparison of Green Building Guidelines for an analysis of the NAHB Model Green Home Building Guidelines). ANSI approved NGBS in January 2009.

The NGBS includes a minimum number of mandatory construction practices and a mandatory minimum point score based on construction practice options under each principle. There are no maximum limits. For single-family homes, for example, projects reach a threshold by reaching specific point scores: 222 points for Bronze, 406 for Silver, 558 for Gold, and 697 for Emerald. In the indoor environmental quality category, the minimum score is 36 for Bronze, 65 for Silver, 100 for Gold, and 140 for Emerald.

Mandatory Criteria: Yes, limited (mandatory minimum points)

Third-Party Certification: Yes

Units Certified: NA

U.S. Environmental Protection Agency Energy Star with Indoor Air Package Pilot Specifications

The U.S. Environmental Protection Agency (EPA) developed the ENERGY STAR with Indoor Air Package (IAP) Pilot Specifications to recognize homes equipped with a comprehensive set of indoor air quality measures. IAP is targeted to production builders, which according to EPA are the most rapidly growing sector of the home building industry and are highly influential in home building trends. Homes that comply with these specifications can use “Indoor Air Package” as a complementary label to ENERGY STAR for homes. As a prerequisite for this label, a home must first be ENERGY STAR qualified. ENERGY STAR is a performance-based program, which requires qualified homes to be at least 15 % more energy efficient than homes built to the 2004 International Residential Code (IRC), and include additional energy-saving features that typically make them 20–30% more efficient than standard homes. IAP requires a suite of additional prescriptive measures, including:



- Moisture Control
- Radon Control
- Pest Control
- HVAC Systems
- Combustion Safety
- Building Materials
- Home Commissioning

Like Energy Star, IAP requires third-party verification through the Home Energy Rating System (HERS).

Mandatory Criteria: Yes, comprehensive

Third-Party Certification: Yes

Building Performance Testing: Yes

Units Certified: Not Applicable (Pilot Program)

www.energystar.gov/index.cfm?c=bldrs_lenders_raters.nh_iap

Method of Analysis

We compared the criteria of the four national programs to a detailed list of healthy homes measures that are aligned with NCHH's seven healthy homes principles. Those principles involve keeping homes:

- Dry
- Clean
- Ventilated
- Safe
- Contaminant-Free
- Pest-Free
- Maintained

These principles were developed by a broad-based expert workgroup of housing and health professionals as part of the federally funded National Healthy Homes Training Center and Network. The principles reflect the latest in scientific research and best practices related to reducing housing-related health hazards. For more information see www.healthyhousing.org/training.

Table 1 presents a detailed analysis comparing each program to the NCHH criteria. The left column presents NCHH's recommended criteria for achieving the aforementioned principles. We compared each program to these criteria and assigned a score based on the following scoring system:

Score	Green Program Description
3	Includes mandatory criterion equivalent to NCHH criterion
2	Includes mandatory criterion similar to NCHH criterion
1	Includes optional criterion that is similar to NCHH criterion
0	Does not include similar criterion

Table 2 provides summary grades for each program, both by each healthy homes principle and overall. We established a target score for each category by multiplying the number of criteria under each healthy homes principle by 2.5 (average 2 and 3 of the scores listed above). For example, if half of the criteria in a category scored a 3 (i.e., half criterion were mandatory and equivalent to the NCHH standard) and half scored a 2 (i.e., were mandatory and similar but not equivalent to the NCHH standard), then the program would achieve 100% of the target score. The score of 2.5 acknowledges that some differences in the language for a specific criterion are likely and acceptable.

The overall grade (A, B, C, D) for the program was calculated by totaling the scores for all the criteria across categories. This provides all criterion equal weight in arriving at a total grade.

Grading Key

A+	>100% of target score, <i>all</i> NCHH criteria included
A	90-100% of target score.

B	80-89% of target score.
C	70-79% of target score.
D	<69% of target score.

This analysis did not assign a weighting factor to each individual criterion because there are generally insufficient scientific data to support such a judgment. The concept of healthy homes involves taking a holistic approach to the home environment by implementing packages of upgrades, which together can ensure the health, safety, and durability of a home. For this reason, the analysis does not credit programs for establishing a threshold number of points for optional items. By definition, this inclusion of optional items (even to achieve an overall point value) will entail trading off some indoor environmental quality item for another.

Results

Tables 1 and 2 show the results of the analysis.

The Enterprise Community Partners Green Communities Program and the EPA Indoor Air Package Programs ranked the highest among the programs included in the analysis. This is largely due to the fact that they include many mandatory criteria for the indoor environment.

The LEED-H and ICC -700-2008 rating systems include a mixture of mandatory and optional criteria to achieve even the lowest LEED rating of “certifiable”. It is not possible to assess the mix of criteria that a builder will select to comply with the standard. NCHH conservatively rated optional criteria as a 1, thereby reducing the LEED-H score for all such criteria. The NGBS relies substantially on optional criteria with a minimal set of mandatory standards. As such the program received the lowest rating.



One reviewer suggested that optional criteria receive greater credit because the flexibility in scoring enables greater program participation. The reviewer also noted that several of the optional healthy homes criteria are pursued by the majority of program participants. The reviewer suggested multiplying the percentage of projects that incorporate the optional measure by the score a measure would have received if it were mandatory as an alternative scoring system. For example, if “landscaping away from a building” would receive a score of 3 as a mandatory element, it would receive a 2.7 if 90% of the program participants selected it as an optional criterion. Although such a nuanced system may reflect a more precise view of the actual compliance with a program’s criteria in a prior year, because programs cannot predict the optional criteria that future projects will select, NCHH felt that these programs could not be scored as highly as those based on mandatory criteria. In addition, NCHH believes that the healthy homes criteria are practical and cost-effective (e.g. avoiding installing carpets in wet areas) and so it is sensible to include them as prerequisites.

Across all the green programs, there is substantial variation in their performance under the *Dry* and *Contaminant-Free* categories with scores ranging from A to D. Energy Star IAP and Green Communities received an A under the Dry category (ENERGY STAR IAP, Green Communities, and LEED-H) because they require extensive moisture control practices. The LEED-H program addresses several aspects of moisture control through its Durability Plan requirement. One concern is that it is not possible to assess whether the plan will always include the most important moisture control elements. Nonetheless, because the durability plans are mandatory and will be evaluated as part of program participation, NCHH rated LEED-H’s Dry criteria as similar to the NCHH specific requirements.

Ensuring structures are properly ventilated is particularly important because of the green building mandate to improve energy efficiency by tightening the building envelope. Energy upgrades can benefit occupant health by increasing comfort and reducing unplanned airflows which can result in moisture problems. Mechanical ventilation helps ensure contaminants and humidity are exhausted to the outside and that the home receives clean, fresh air. NCHH has identified the American Society of Heating, Refrigerating, and Air-Conditioning

Engineers standard 62.2 (ASHRAE 62.2, 2007) as the industry standard for ventilation for buildings of four stories or less, which should be included in all green and healthy programs. All the programs, except NGBS specifically reference ASHRAE 62.2 as the ventilation performance standard.

The evaluation indicates greater consistency across green programs for the *Pest-Free* and *Maintained* categories. All of the programs included criteria to minimize pest infestations following the least toxic methods and to educate homeowners about proper maintenance of their green homes. In contrast, all of the programs included in the analysis overlooked safety (e.g., preventing trips/falls and poisonings), even though the home is the predominant source of unintentional injuries for children in the United States. In addition, the programs missed opportunities to incorporate building finishes that are easy to keep clean (e.g. smooth, cleanable flooring), which help owners reduce allergens and contaminants that may accumulate in a home.

Finally, in this analysis we examined the extent to which the programs incorporate third-party verification. All of the programs, except Enterprise Green Communities, require third-party verification. However, Green Communities does require its participants to certify compliance with the program criteria. It also conducts inspections and performance testing of a sampling of units.

	Enterprise Community Partners Green Communities	ENERGY STAR Indoor Air Package	USGBC LEED Homes	ICC-700 National Green Building Standard
SAFE (5 Criteria – 12.5 points)				
Hot Water Temperature <120 F	0	0	0	0
Locked Medicine Storage Cabinets	0	0	0	0
Shower Grab Bars	0	0	0	0
Smoke Detectors	2	2	2	2
Carbon Monoxide Alarms	3	3	3	1
TOTAL	5 (40%)	5 (40%)	5 (40%)	3 (24%)
CONTAMINANT-FREE (7 Criteria – 17.5 points)				
Low VOC Products	3	0	1	1
Urea Formaldehyde Free Composite Wood Products or Sealed	3	3	1	1
Low VOC Carpet	3	3	1	1
Garage Isolation	3	3	1	2
Smooth Cleanable Low VOC Floors	1	1	1	1
Combustion Venting	2	3	3	1
Radon Test and Mitigation System	3	2	2	2
Smoke-free Policy – optional	0	3	0	1
Use Lead Safe Work Practices - optional applicable only to rehabilitation	3	na	na	3
TOTAL *does not include optional scores	18 (103%)	17 (97%)	10 (57%)	9 (51%)
PEST-FREE (1 Criterion – 2.5 points)				
Rodent Proof Materials	3	3	2	1
TOTAL	3 (120%)	3 (120%)	2 (80%)	1 (40%)
MAINTAINED (2 Criteria – 5 points)				
User's Manual for Health Features	3	3	3	3
Homeowner's Manual for Equipment and Certification	3	2	3	2
TOTAL	6 (120%)	5 (100%)	6 (120%)	5 (100%)
THIRD-PARTY VERIFICATION (1 Criterion - 2.5 points)				
On-Site Inspection	2	3	3	3
TOTAL	2 (80%)	3 (120%)	3 (120%)	2 (120%)

Table 2: National Green Program Health Grades

Health Principles	Enterprise Community Partners Green Communities	EPA Indoor Air Package	USGBC LEED For Homes	ICC-700 National Green Building Standard
DRY	A	A	B	C
CLEAN	D	D	D	D
VENTILATED	A	A+	A	C
SAFE	D	D	D	D
CONTAMINANT-FREE	A	A	D	D
PEST-FREE	A+	A+	B	D
MAINTAINED	A+	A	A+	A
VERIFIED/CERTIFIED	B	A+	A+	A+
OVERALL GRADE *	B	B	C	D

* Based on total score across all criteria in comparison to 85 target score

Grading Key

A+	>100%, <i>all</i> NCHH criteria included
A	90-100% of target score.
B	80-89% of target score.
C	70-79% of target score.
D	<70% of target score.

