




U.S. Department of Housing and Urban Development

Office of Lead Hazard Control and Healthy Homes

Healthy Homes Technical Studies Grant Program Pre Application
FR-5900-N-15

 for Matthew Ammon

Matt Ammon, Director
Office of Healthy Homes and Lead Hazard Control

6/9/15

Date

Healthy Homes Technical Studies Grant Program Pre Application

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TABLE OF CONTENTS

- I. [Funding Opportunity Description.](#)
- II. [Award Information.](#)
- III. [Eligibility Information.](#)
 - A. Eligible Applicants.
 - B. Cost Sharing or Matching.
 - C. Other.
- IV. [Application and Submission Information.](#)
 - A. Obtaining an Application Package.
 - B. Content and Form of Application Submission.
 - C. DUNS Number and SAM Registration.
 - D. Application Submission Dates and Times.
 - E. Intergovernmental Review.
 - F. Funding Restrictions.
 - G. Other Submission Requirements.
- V. [Application Review Information.](#)
 - A. Criteria.
 - B. Review and Selection Process.
 - C. Anticipated Announcement and Award Dates.
- VI. [Award Administration Information.](#)
 - A. Award Notices.
 - B. Administrative, National and Departmental Policy Requirements.
 - C. Reporting.
- VII. [Agency Contact\(s\).](#)
- VIII. [Other Information.](#)
- IX. [Appendix.](#)

U.S. Department of Housing and Urban Development

Program Office: Office of Lead Hazard Control and Healthy Homes
Funding Opportunity Title: Healthy Homes Technical Studies Grant Program Pre Application
Announcement Type: Initial
Funding Opportunity Number: FR-5900-N-15
Primary CFDA Number: 14.906
Due Date for Applications: **July 16, 2015**

This Notice solicits Pre-Applications only. Top-ranked submissions will be invited to submit a full application for funding in response to a second announcement (Healthy Homes Technical Studies Programs Full-Application).

FOR FURTHER INFORMATION CONTACT: Please direct questions regarding the specific program requirements of this Program Notice of Funding Availability (NOFA) to the agency contact identified in Section VII. Please direct questions regarding the FY 2015 General Section to the Office of Strategic Planning and Management, Grants Management Division, at (202) 708-0667 (this is not a toll-free number). Persons with hearing or speech impairments may access these numbers via TTY by calling the Federal Relay Service at 1-800-877-8339.

Additional Overview Information

1. Incorporation of the General Section. HUD publishes a General Section each fiscal year that contains mandatory requirements for all applicants to HUD's various competitive grant programs, including this NOFA. Applications must meet all of the requirements of the General Section in addition to the requirements of this NOFA to be considered and potentially receive funding. The full title of the General Section is the General Section to the Fiscal Year 2015 NOFAs for Discretionary Programs. Copies are available at Grants.gov or HUD's Funds Available page, http://portal.hud.gov/hudportal/HUD?src=/program_offices/administration/grants/fundsavail.

2. OMB Approval Number(s): 2539-0015

I. Funding Opportunity Description.

A. Program Description.

1. Purpose.

HUD is funding studies to improve HUD's and the public's knowledge of housing-related health and safety hazards and to improve or develop new hazard assessment and control methods, with a focus on key residential health and safety hazards. HUD is especially interested in applications which will advance our knowledge on key healthy homes issues by addressing important gaps in the science related to the accurate and efficient identification of hazards and cost effective hazard mitigation. Key hazards are discussed in Appendix A, *Key Residential Health and Safety Hazards*, of this NOFA. A list of references that serves as the basis for the information provided in this NOFA is provided as Appendix B, *Relevant Publications, Guidelines and Other Resources*.

The Healthy Homes Technical Studies program is important for the achievement of research goals

identified in both HUD's *Healthy Homes Strategic Plan* (available at: <http://portal.hud.gov/hudportal/documents/huddoc?id=hhstratplan7909.pdf>) and the federal healthy homes strategic plan, *Advancing Healthy Housing: A Strategy for Action* (available at: http://portal.hud.gov/hudportal/HUD?src=/program/offices/healthy_homes/advhh).

a. General Goals

The overall goal of the Healthy Homes Technical Studies program is to advance the recognition and control of priority residential health and safety hazards and more closely examine the link between housing and health. The overall objectives of the Healthy Homes Technical Studies Program include, but are not limited to:

- (1) Development and evaluation of cost effective test methods and protocols for identification and assessment of housing-related hazards.
- (2) Development and assessment of cost-effective methods for reducing or eliminating housing-related hazards.
- (3) Evaluation of the effectiveness of housing interventions including educational interventions, and barriers and incentives affecting future use of the most cost-effective strategies.
- (4) Investigation of the epidemiology of housing-related hazards and illness and injuries associated with these hazards, with an emphasis on vulnerable populations (e.g., children, senior citizens, etc.).
- (5) Analysis of existing data or generation of new data to improve knowledge regarding the prevalence and severity of specific hazards in various classes of housing, with a focus on low-income housing.
- (6) Improved understanding of the relationship between a residential exposure and illness or injury of children or other vulnerable populations. (**Note:** Applicants that propose this type of study should discuss how the knowledge that is gained from the study could be used in a program to reduce these hazards in target communities).

HUD anticipates that the results of program-supported studies will help to develop evidence-based approaches that are cost-effective and efficient and result in the reduction of health threats for the maximum number of residents and, in particular, children and other vulnerable populations in low income households. Study results are also expected to improve our understanding of how specific aspects of indoor environmental quality can affect the health of residents.

The Healthy Homes Technical Studies Program is a component of HUD's Healthy Homes Program. A description of the Healthy Homes Program is available on the HUD website at <http://www.hud.gov/offices/lead/hhi/index.cfm>.

In addition to deficiencies in basic housing conditions that may impact health (e.g., structural problems, lack of adequate heating and cooling, pest infestation, moisture infiltration, etc.), other more subtle health hazards may exist in the residential environment (e.g., asthma triggers, volatile and semi-volatile organic compounds, pesticide residues, etc.). While some hazards will be found disproportionately in housing that is substandard, housing-related environmental hazards may also exist in housing that is otherwise of good quality. Appendix A of this Notice briefly describes the key housing-associated health and injury hazards HUD considers targets for intervention. HUD has also developed resource papers on a number of topics of importance under the Healthy Homes Program, including mold, environmental aspects of asthma, carbon monoxide, pesticides, residential assessment and unintentional injuries. These resource papers can be downloaded from <http://www.hud.gov/offices/lead/hhi/index.cfm>.

b. Community Participation

HUD believes that it is important for researchers to incorporate meaningful community participation in the development and implementation of studies that are conducted in communities and/or involve significant interaction with community residents. Community participation can improve study effectiveness in various ways, including the development of more appropriate research objectives, improving recruitment and retention of study participants, improving participants' involvement in and understanding of a study, improving ongoing communication between researchers and the affected community, and more effectively disseminating study findings. HUD encourages applicants to consider using a community based participatory research (CBPR) approach, where applicable, in study design and implementation. (See, e.g., The National Institute of Environmental Health Sciences report titled Successful Models of Community-Based Participatory Research at http://portal.hud.gov/hudportal/documents/huddoc?id=DOC_12485.pdf.)

CBPR is characterized by substantial community input in all phases of a study (i.e., design, implementation, data interpretation, conclusions, and communication of results).

2. Changes from Previous NOFA.

The following is a summary of major changes in this NOFA relative to the FY2014 Healthy Homes Technical Studies NOFA. This is not intended to be an exhaustive list, so applicants should be sure to read the entire NOFA.

- a. The maximum award amount for successful applicants under this NOFA is reduced from \$750,000 to \$700,000.
- b. The award amount available for qualified "new applicants" under this NOFA is reduced from \$750,000 to \$700,000.
- c. This NOFA is for Healthy Homes Technical Studies only.
- d. HUD has added a new topic of particular interest as well as reduced the number of topics that the Department will not fund in FY 2015 (see section III.C.1)

3. Definitions.

a. Eligibility Requirements – Eligibility requirements are those requirements that must be met for an application to be eligible for funding. Deficiencies in meeting an eligibility requirement may be categorized as either curable or non-curable.

b. Threshold Requirement – Threshold requirements are a category of eligibility requirements. A threshold requirement is a requirement that must be met in order for an application to be reviewed. Threshold requirements are not curable.

Threshold requirements are listed in Section III.C.2. of both the 2015 General Section and in this Program NOFA.

Applicants must ensure their application package addresses all threshold requirements. Please check your application carefully!

c. Deficiency – Deficiencies are not the same as errors. Errors are never curable except as permitted under Section IV.C.2. Deficiencies are items of missing or omitted information within a submitted application. Deficiencies typically involve missing documents, information on a form, or some other type of unsatisfied information requirement (e.g., an unsigned form, unchecked box, etc.). Depending on specific criteria, deficiencies may be either curable or non-curable.

d. Curable Deficiency – A curable deficiency is a specific type of deficiency that applicants may correct with timely action. To be curable the deficiency must:

- Not be a threshold requirement;

- Not influence how an applicant is ranked or scored versus other applicants; and
- Be remedied within the time frame specified in the notice of deficiency.

e. Non-Curable Deficiency – An applicant cannot correct a non-curable deficiency after the submission deadline. Non-curable deficiencies are deficiencies that if corrected would change an applicant’s score or rank versus other applicants. Non-curable deficiencies may result in an application being marked ineligible, or otherwise adversely affect an application’s score and final determination.

B. Authority.

The Healthy Homes Technical Studies program is authorized under sections 501 and 502 of the Housing and Urban Development Act of 1970 (12 U.S.C. §§ 1701z-1 and 1701z-2). Fiscal Year 2015 funds are authorized under the Department of Housing and Urban Development Appropriations Act, 2015 (Public Law 113-235), approved on December 16, 2014.

II. Award Information.

A. Available Funds.

HUD is making available through this NOFA **\$2,000,000** for Healthy Homes Technical Studies Grant Program Pre Application.

Additional funds may become available for award under this NOFA as a result of HUD's efforts to recapture unused funds, use carryover funds, or because of the availability of additional appropriated funds. Use of these funds will be subject to statutory constraints. All awards are subject to the applicable funding restrictions described in the General Section and to those contained in this NOFA.

B. Number of Awards.

HUD expects to make approximately 4 awards from the funds available under this NOFA.

The award number may be modified subject to the availability of appropriations.

C. Minimum/Maximum Award Information.

Note for New Applicants. If selected and invited to submit a full application, HUD on recommendation of the Application Review Panel will make an award of up to \$700,000 for the highest scoring application from a qualified “new applicant”, on the condition that the full application receives a score of at least 85 points. A new applicant is an organization that has not been previously funded by the Office of Lead Hazard Control and Healthy Homes (OLHCHH) under the Healthy Homes Technical Studies Grant Program as the primary grantee. A new applicant may have previously been a sub-grantee under an award to another organization. If there is not a qualified new applicant for funding under the provisions above, funds will be made available to applicants based on the final overall ranking.

Estimated Total Funding:	\$2,000,000
Minimum Award Amount:	\$300,000 Per Project Period
Maximum Award Amount:	\$700,000 Per Project Period

D. Period of Performance.

The start date will be determined during the period of negotiations with successful applicants. The period of performance cannot exceed 36 months from the time of award. The proposed performance period should include adequate time for such project components as the Institutional Review Board process, if required, the recruitment of study participants and/or new staff, and the development of methods (e.g., analytical methods), all of which have been found to delay projects in the past.

Estimated Project Start Date: 10/01/2015
Estimated Project End Date: 09/30/2018
36-month project with three 12-month budget periods

Period of performance extensions for delays due to **exceptional conditions beyond the grantee's control will be considered** for approval by HUD in accordance with 2 CFR § 200.308(d)(2), as applicable, and the OLHCHH Program Guide. If requested, determined to be appropriate and subsequently approved by OLHCHH, grantees will be eligible to receive a single extension of up to 12 months in length.

E. Type of Funding Instrument.

Funding Instrument Type: Cooperative Agreement

Awards will be made as cooperative agreements. Anticipated substantial involvement by HUD staff for cooperative agreements may include, but will not be limited to:

1. Review and suggestion of amendments to the study design, including: study objectives; field sampling plan; data collection methods; sample handling and preparation; and sample and data analysis.
2. Review and provision of technical recommendations in response to quarterly progress reports (e.g., amendments to study design based on preliminary results).
3. Review and provision of technical recommendations on the journal article(s) and final study report.

F. Supplementation.

Not Applicable

III. Eligibility Information.

A. Eligible Applicants.

Eligible applicants under the NOFA include:

State governments
County governments
City or township governments
Special district governments
Independent school districts
Public and State controlled institutions of higher education
Native American tribal governments (Federally recognized)
Public housing authorities/Indian housing authorities
Native American tribal organizations (other than Federally recognized tribal governments)
Nonprofits having a 501(c)(3) status with the IRS, other than institutions of higher education
Nonprofits without 501(c)(3) status with the IRS, other than institutions of higher education
Private institutions of higher education
For profit organizations other than small businesses
Small businesses
Others (see text field entitled "Additional Information on Eligibility" for clarification)

Additional Information on Eligibility:

1. Applications to supplement existing projects are eligible to compete with applications for new awards. Federal agencies are not eligible to submit applications. The 2015 General Section identifies threshold requirements that must be met for an organization to receive an award.
2. If your organization received an award under the FY2014 Healthy Homes Technical Studies Grant Program cycle, you are not eligible to apply unless you apply with a different Principal Investigator (PI).

HUD does not award grants to individuals. HUD will also not evaluate applications from ineligible applicants.

All applicants must have an active Data Universal Numbering System (DUNS) number (<http://fedgov.dnb.com/webform>) and have an active registration in the System for Award Management (SAM) (www.sam.gov) before submitting an application. Getting a DUNS number and completing SAM registration can take up to four weeks; therefore applicants should start this process or check their status early.

See also Section IV.B below for necessary content and form of the application.

B. Cost Sharing or Matching.

This Program does not require an applicant to leverage resources through cost sharing or matching. Generally, federal sources are not allowed to be used as cost share or match unless otherwise permitted by a program's authorizing statute.

NOTE: Under the full application NOFA (Healthy Homes Technical Studies - Full Application) to be published later, pre-selected applicants will receive additional points if they provide evidence of significant resource leveraging.

C. Other.

All applicants must also refer to Section III of the General Section for information on HUD-wide eligibility requirements. These requirements may determine whether your application is reviewed or make your application ineligible for funding.

Program specific eligibility criteria for this competition includes:

A. Eligible Activities.

a. HUD is particularly interested in the following topics:

(1) Assessing or improving the efficacy of current methods for residential Integrated Pest Management (IPM). (See e.g., *Integrated Pest Management, A Guide for Affordable Housing*, available at: www.Stoppests.org and the Centers for Disease Control and Prevention's (CDC) IPM web page, <http://www.cdc.gov/nceh/ehs/eLearn/IPM.htm>). Topics of interest include but are not limited to:

- (a) Identification and evaluation of specific practices and processes that help overcome current challenges/obstacles and enhance the adoption of IPM by multi-family housing owners and managers.
- (b) Conducting applied research in identifying mechanisms through which human activities/behaviors influence bed bug infestations and control.
- (c) Identifying new methods or evaluating existing methods for bedbug detection, prevention and control.

(2) Developing easily replicable, cost-effective methods for preventing and controlling mold and excess moisture in various types of residential buildings.

(3) Improving indoor air quality, such as through cost-effective approaches to upgrading residential ventilation or improving control/management of combustion appliances. This includes studies of practical approaches to mitigate the health impacts from infiltration of ambient air pollution (e.g., respirable particulate) due to motor vehicle emissions from roadways and transportation hubs such as bus terminals, etc. Applicants proposing research on methods to reduce indoor concentrations of respirable particulates should refer to guidance published by the Lawrence Berkeley National Laboratory (Chan and Singer 2014).

(4) Evaluating the effectiveness of education and outreach methods designed to provide at risk families (including minority families, especially those with young children, persons with a variety of disabilities and those with Limited English Proficiency (LEP)) with the knowledge to adopt self-protective behaviors with respect to residential health hazards. If you propose a study in this focus area you should describe, cite and discuss the theoretical basis for the education/outreach approach that you are proposing.

(5) Third Hand Smoke (THS): Some research has indicated that THS (i.e., the residue from tobacco smoke that collects on interior surfaces) could result in significant exposure to toxic substances. Additional research is needed to improve our understanding of exposure to these residues and their potential health impact and the efficacy of cleaning techniques in reducing THS residue from surfaces in homes.

(6) Conducting cost-benefit or cost-effectiveness studies on the health benefits of healthy homes interventions in high risk populations (e.g., implementation of smoke-free housing policies, reductions in the incidence of injuries among children or the elderly, savings from using an integrated healthy homes assessment and intervention approach). Applicants are encouraged to team with existing projects or studies through which the housing interventions are being conducted.

(7) Injury Prevention Measures: HUD is interested in demonstrating the feasibility and cost-effectiveness of incorporating injury prevention measures into residential programs, including green renovation and rehabilitation programs. Such measures include (e.g., grab bars in showers, anti-scald devices, lockable medicine cabinets, etc.) are not typically included in green building programs but could be incorporated to enhance the effects of the program on resident safety and health.

(8) Radon Test Protocols in Multifamily Housing: Current guidance and requirements for radon testing in multifamily housing differ with respect to protocols for the selection and testing of units for radon. For example, one entity may require a minimum of 25% of randomly selected ground level units in covered properties be tested to determine baseline radon levels, while another may require a minimum of 10%. This differs from the American Association of Radon Scientists and Technologists' consensus standard, Protocol for Conducting Radon and Radon Decay Product Measurements in Multifamily Buildings, which requires testing of 100% of ground level units in multifamily properties (ANSI-AARST MAMF-2012, available through <http://aarst.org/bookstore.shtml>). State testing requirements also exist which rely on industry standards to varying degrees. The ANSI-AARST testing standard and the various multifamily testing requirements are based on professional judgment. Research is needed to develop a cost effective, evidence-based testing protocol for multifamily housing that is sufficiently protective (i.e., with respect to the ability to identify units with elevated levels) without being overly burdensome to property owners.

(9) HUD is interested in studies and methodologies that evaluate the longer term efficacy of multifaceted home asthma interventions (i.e., for children with poorly controlled asthma) conducted during the implementation of research or by programs that provide these services (e.g., HUD Healthy Homes Technical Studies, other HUD Healthy Homes Program grantees, or programs of other HUD

offices or other agencies). Research and program evaluations have demonstrated that these interventions can be effective in reducing exposure to asthma triggers, improving asthma control in children, and improving caregiver quality of life; however, the maximum post-intervention follow-up period is generally 12 months. The objectives of interest to HUD are to determine whether the indoor environmental and health benefits of multifaceted home interventions persist longer than 12 months. The extended follow-up could be conducted in the context of ongoing research or programmatic activities or following the completion of a study or an intervention program. The latter focus could assess the longer term efficacy of interventions (e.g., trigger control and asthma management education, moisture and pest control, improved dust cleaning) following removal of household support by research/program staff. You should be aware that proposals to conduct this extended follow-up in a programmatic context must use rigorous methods for the proposals to be competitive.

(10) Applications for additional work related to ongoing HUD-funded technical studies (i.e., for work outside of the scope of the original agreement) are eligible to compete with applications for awards on new subjects. These applications will be evaluated in the same manner as applications on new subjects. Brief descriptions of current and recently completed Healthy Homes Technical Studies projects and grantee contact information can be found on the HUD website at http://portal.hud.gov/hudportal/HUD?src=/program_offices/healthy_homes/hhi/hhts.

(11) Other Focus Areas that are Consistent with the Overall Goals of HUD's Healthy Homes Technical Studies Program. HUD will consider funding applications for technical studies on other topics that are consistent with the overall goals and objectives of the Healthy Homes Technical Studies program, as described above. In such instances, as part of being able to receive an award, you must describe in sufficient detail how the proposed study is consistent with the overall program goals and objectives.

b. HUD **will not** fund applications on the following topics:

(1) Studies that focus on the effects of retrofits to existing housing for the purpose of improving energy efficiency, on indoor air quality or other measures of indoor environmental quality or on occupant health.

(2) Studies that focus on determining the effectiveness of housing interventions on improving the health of adults with chronic obstructive pulmonary disease (COPD).

B. General Information. You may address one, or more than one, of the above technical studies topic areas within your proposal, or submit separate applications for different topic areas. In proposing to conduct a study on a particular topic, applicants should consider:

a. The ability of the study to generate definitive results. Since the size of the awards under the NOFA for the full application to be issued in conjunction with this NOFA for the pre-application limits the ability of applicants to design and implement research on health outcomes using the strongest methodology (i.e., a randomized controlled trial), applicants should consider focusing on important indoor environmental quality (IEQ) measures instead of health outcomes in studies where this is appropriate. A focus on environmental outcomes is generally expected to produce more definitive results as opposed to a health outcomes focus, and the impact of improvements to IEQ on health outcomes can be inferred where the evidence base is sufficient.

b. The “fit” of the proposed hazard assessment and/or control methods within the overall goal of addressing “priority” health and safety hazards in a cost-effective manner;

c. The expected efficacy and cost effectiveness of the proposed methods for hazard control and risk reduction. Questions to consider include the degree to which interventions would be accepted by occupants, ease and cost of implementation, the length of time the intervention would stay effective, and the cost effectiveness of the intervention in preventing illness or injury or in improving the health

of residents with existing illness;

d. Where and how these methods would be applied and tested, and/or demonstration activities performed; and

e. The degree to which the study will help develop practical, widely applicable and accepted methods and protocols or improve our understanding of a residential health hazard.

Applicants should consider the efficiencies that might be gained by working cooperatively with one or more recipients of HUD's Healthy Homes Production grants or Lead-Based Paint Hazard Control or Lead Hazard Reduction Demonstration grants, which are widely distributed throughout the United States. Information on current grantees is available at http://portal.hud.gov/hudportal/HUD?src=/program_offices/healthy_homes/lbp/lhc.

NOTE: A limited amount of hazard control activities, which involve construction rather than research, may be conducted as part of a Healthy Homes Technical Studies project (see Section IV.E.8).

C. Program Requirements.

a. Program Performance. Grantees shall take all reasonable steps to accomplish all activities within the approved period of performance. HUD reserves the right to terminate the cooperative agreement prior to the expiration of the period of performance if the grantee fails to make reasonable progress in implementing the approved program of activities or fails to comply with the terms of the cooperative agreement.

b. Regulatory Compliance. Grantees must comply with all relevant federal, state, and local regulations regarding exposure to and proper disposal of hazardous materials.

c. Blood Lead Testing. Any blood lead testing, blood lead level test results, medical referral, or follow-up for children under 6 years of age must be conducted according to the recommendations of the CDC, Preventing Lead Poisoning in Young Children (see Appendix B of this NOFA).

d. Restricted Use of Funds. HUD healthy homes technical studies grant funds will not replace existing resources dedicated to any ongoing project.

e. Laboratory Analysis for Lead. Laboratory analysis covered by the EPA's National Lead Laboratory Accreditation Program (NLLAP) must be conducted by a laboratory recognized under the program, unless approved by HUD.

f. Laboratory Analysis for Mold. Samples to be analyzed for mold (fungi) must be submitted to a laboratory accredited through the Environmental Microbiological Laboratory Accreditation Program (EMLAP), administered by the American Industrial Hygiene Association (AIHA), unless approved by HUD.

g. Human Research. Human research subjects will be protected from research risks in conformance with Federal Policy for the Protection of Human Subjects, required by HUD at 24 CFR 60.101, which incorporates the Department of Health and Human Services (DHHS) Protection of Human Subjects regulation at 45 CFR part 46 subpart A.

h. OSHA Compliance. The requirements of the Occupational Safety and Health Administration (OSHA) (e.g., 29 CFR parts 1910 and/or 1926, as applicable) or the state or local occupational safety and health regulations, whichever are most stringent, will be met.

i. Civil Rights. The institution administering the grant must comply with all non-discrimination, affirmatively furthering fair housing and other Fair Housing requirements as set forth in section III.C.3 of the FY 2015 **General Section**.

j. Disclosure. All test results and other information in pre-1978 housing related to lead-based paint or lead-based paint hazards must be provided to the owner of the unit, together with a statement describing the owner's legal duty to disclose the knowledge of lead-based paint and its hazards to

prospective tenants (before initial leasing, or before lease renewal with changes) and buyers (before sale) (24 CFR Part 35, subpart A). Disclosure of other identified housing-related health or safety hazards to the owner of the unit, for purposes of remediation, is encouraged but not required by HUD.

k. Privacy. Submission of any information to databases (whether website, computer, paper, or other format) of addresses of housing units identified, treated or cleared under these studies is subject to the protections of the Privacy Act of 1974, and shall not include any personal information that could identify any household member. You should also check to ensure you meet state and local privacy regulations.

l. Community Involvement. Applicants must incorporate meaningful community involvement into any study that requires a significant level of interaction with a community during implementation (e.g., projects being conducted within occupied dwellings or which involve surveys of community residents). The term community refers to a variety of populations comprised of persons who have commonalities that can be identified (e.g., based on geographic location, ethnicity, health condition, common interests). Applicants should identify the community that is most relevant to their particular project. Meaningful community involvement also requires that recipients ensure that information provided to the community during these activities is provided in a manner that is effective for persons with disabilities (see 24 CFR § 8.6) and gives meaningful access to persons with LEP.

There are many different approaches to involving the community in the conception, design, and implementation of a study and the subsequent dissemination of findings. Examples include but are not limited to: establishing a structured approach to obtain community input and feedback (e.g., through a community advisory board); including one or more community-based organizations as study partners; employing community residents to recruit study participants and collect data; and enlisting the community in the dissemination of findings and translation of results into improved policies and/or practices. A discussion of community involvement in research involving housing-related health hazards can be found in Chapter 5 of the Institute of Medicine publication titled “Ethical Considerations for Research on Housing-Related Health Hazards Involving Children” (see Appendix B for more information on this report).

m. Economic Opportunities for Low- and Very Low-Income Persons (Section 3). Section 3 of the Housing and Urban Development Act of 1968 (12 U.S.C. § 1701u) applies to this program when activities that are conducted pursuant to this NOFA include housing construction or rehabilitation (including reduction and abatement of lead-based paint hazards). Section 3 requires that, to the greatest extent feasible, training, employment, contracting, and other economic opportunities are provided to low- and very low-income persons, particularly those who are recipients of government assistance for housing, and to business concerns that provide economic opportunities that are directed to low- and very low-income persons in the area in which the project is located. For more information on these requirements, see 24 CFR Part 135 and section III.C.3.c of the FY 2015 **General Section**.

n. Standardized Dust Sampling Protocol and Quality Control Requirements. Grantees collecting samples of settled dust from participant homes for environmental allergen analyses (e.g., cockroach, dust mite) will be required to use a standard dust sampling protocol, unless the grantee provides compelling justification to use an alternate protocol (e.g., the study involves the development of an alternative sampling method). The HUD protocol can be found on the OLHCHH website at: <http://www.hud.gov/offices/lead/hhi/hhiresources.cfm>. Grantees conducting these analyses may also be required to include quality control dust samples, provided by OLHCHH at no cost to the grantee, with the samples that are submitted for laboratory analyses.

o. Requirements for peer review of scientific data in accordance with the Office of Management and Budget Information Quality Guidelines. All HUD-sponsored research is subject to the OMB Final Information Quality Bulletin for Peer Review (70 FR 2664-2677, January 14, 2005) prior to its public dissemination. In accordance with paragraph II.2 of the Bulletin, HUD will not require further peer

review conducted on information that has already been subjected to adequate peer review.

p. Principal Investigator (PI). The PI for the proposed study must directly represent and be directly employed by the applicant's organization for the proposed role in the grant application. If the proposal includes co-PIs, the lead co-PI must represent and be directly employed by the applicant's organization.

1. Statutory and Regulatory Requirements.

Environmental Requirements.

a. Eligible Construction and Rehabilitation Activities. A FY 2015 Healthy Homes Technical Studies award does not constitute approval of specific sites where activities that are subject to environmental review may be carried out. The provisions of section 305(c) of the Multifamily Housing Property Disposition Reform Act of 1994, implemented by HUD regulations at 24 CFR part 58, "Environmental Review Procedures for Entities Assuming HUD Environmental Responsibilities," are applicable to properties assisted with Healthy Homes Technical Studies funds. Therefore, recipients conducting eligible construction and rehabilitation activities must comply with 24 CFR part 58. Recipients that are States, units of general local government or Native American tribes must carry out environmental review responsibilities as a responsible entity under part 58. Recipients that are academic, not-for-profit, or for-profit institutions, or specialized units of local government, must contact and partner with a non-recipient responsible entity, usually the unit of general local government or Native American tribe, to assume the environmental review responsibilities for construction or rehabilitation activities funded (in whole or in part) under this NOFA. Reasonable expenses incurred for compliance with these environmental requirements are eligible expenses under this NOFA. Under 24 CFR 58.11, where the recipient is not a State, unit of general local government or Native American tribe, if a responsible entity objects to performing the environmental review, or the recipient objects to the responsible entity performing the environmental review, HUD may designate another responsible entity to perform the review or may perform the environmental review itself under the provisions of 24 CFR part 50. When HUD performs the review itself, following grant award execution, HUD will be responsible for ensuring that any necessary environmental reviews are completed.

b. For all cooperative agreements under this NOFA, recipients and other participants in the project are prohibited from undertaking, or committing or expending HUD or non-HUD funds (including leveraged funds) on, a project or activities under this NOFA (other than activities listed in 24 CFR 58.34, 58.35(b) or 58.22(f)) until the responsible entity completes an environmental review and the applicant submits and HUD approves a Request for the Release of Funds and the responsible entity's environmental certification (both on Form HUD-7015.15) or, in instances where the recipient is not a State, unit of general local government or Native American tribe and HUD performs the environmental review under part 50, HUD has completed the review and notified the grantee of its approval. The results of the environmental reviews may require that proposed activities be modified or proposed sites rejected. For Part 58 procedures, see <http://www.hud.gov/offices/cpd/environment/index.cfm>. **For assistance, contact Karen Griego, the Office of Lead Hazard Control and Healthy Homes Program Environmental Clearance Officer at (505) 346-6462 (this is not a toll free-number) or the HUD Environmental Clearance Officer in the HUD Field Office serving your area.** If you are a hearing- or speech-impaired person, you may reach the telephone number via TTY by calling the toll-free Federal Relay Service at 1-800-877-8339. Recipients of a grant under this program will be given additional guidance in these environmental responsibilities.

c. All other activities not related to construction or rehabilitation activities are categorically excluded under 24 CFR 50.19(b)(1), (3), (5) and (9) from the requirements of the National Environmental Policy Act of 1969 (42 U.S.C. § 4321) and are not subject to environmental review under the related environmental laws and authorities at 24 CFR 50.4.

2. Threshold Requirements.

Only applications that meet all threshold requirements established in the General Section and Program NOFA will be evaluated. In addition to the threshold criteria outlined in the General Section, including the Resolution of Outstanding Civil Rights Matters (prior to application deadline), the following threshold requirements must be met:

No additional threshold requirements.

3. Compliance with Nondiscrimination and Related Requirements.

See section III.C.3 of the FY 2015 **General Section**.

4. Other Requirements. N/A

IV. Application and Submission Information

A. Obtaining an Application Package.

An electronic copy of the Application Package and Application Instructions for this NOFA can be downloaded from [Grants.gov](http://www.grants.gov) at <http://www.grants.gov/applicants/apply-for-grants.html>. Unless an applicant received a waiver for good cause, applications must be submitted electronically via Grants.gov except Continuum of Care applications. The Continuum of Care application is submitted through HUD's e-snaps system.

An applicant demonstrating good cause may request a waiver from the requirement for electronic submission. Applicants that cannot submit their applications electronically and must seek a waiver of the electronic grant submission requirements must submit a waiver request so that the request is received at least 15 days before the application deadline. If HUD waives the requirement, your paper application must be received by HUD before the deadline of this NOFA. To request a waiver and receive a paper copy of the application materials, you should contact:

Dr. J Kofi Berko Jr
Office of Lead Hazard Control & Healthy Homes
US Department of Housing & Urban Development
451 7th Street, S.W. Rm 8236
Washington, DC 20410
Phone: 2024027696
Email: j.kofi.berko@hud.gov

If you wish to request a waiver of electronic submission of your application, you must do so in writing; for speed, you should use email. See Section IV.A of the General Section for requirements for requesting and submitting a waiver. A waiver request must be received no later than 15 days prior to the application deadline date and should be submitted to: j.kofi.berko@hud.gov.

[Grants.gov](http://www.grants.gov) provides customer support information on its website at <http://www.grants.gov/contactus/contactus.jsp>. If you have difficulty accessing the application and instructions or having technical problems, you can receive customer support from [Grants.gov](http://www.grants.gov) by calling (800) 518-GRANTS (this is a toll-free number) or by sending an email to support@grants.gov. (Hearing- or speech-challenged individuals may access this number through TTY by calling the toll-free Federal Relay Service at 800-877-8339.) The

[Grants.gov](https://www.grants.gov) Help Desk can be reached twenty-four hours per day, seven days per week, except federal holidays. HUD recommends calling the Help Desk rather than emailing, because determining the basis for the problem may take some conversation with the [Grants.gov](https://www.grants.gov) Support Customer Service Representative.

B. Content and Form of Application Submission.

To ensure that the correct Application Package and Application Instructions are used, applicants must verify that the CFDA number and CFDA Description on the first page of the Application Package downloaded from Grants.gov, as well as the Opportunity Title, and the Funding Opportunity Number match the Program and NOFA to which they are applying. Applications will only be considered for the competition indicated in boxes 11, 12, and 13 on the SF-424 submitted in the application.

1. Content

Forms for your package include the forms outlined below:

Additionally, your complete application must include the following narratives and non-form attachments:

Preliminary Applications. This preliminary application shall consist of a cover sheet with the name and contact information for the applicant and a narrative addressing the rating factors which **must not exceed 5 pages in length** (excluding the cover sheet). In addition, the application must be submitted and formatted to fit on 8 ½ by 11-inch paper, with one-inch margins (for the top, bottom, left, and right sides of the document) and in standard Times New Roman 12-point font. Please number the pages. Note that although submitting pages in excess of the page limit will not disqualify the pre-application, HUD will not consider the information on any page beyond the page limit. Applicants should also submit the following as part of the pre-application package in addition to the 5-page narrative: biographical sketches (maximum length of one page per person) for a maximum of three key personnel; a list of references that are cited in the responses to the rating factors; the estimated total amount that would be requested in a full application, and an abstract of 200 words or less. The abstract should list the study objectives, identify partner organizations, identify the target population/community, and clearly identify the knowledge gap that the study will address. The pre-application package should also include Form SF424_Application_for_Federal_Assistance (be sure to correctly identify the NOFA title, Funding Opportunity Number and CFDA number). Applicants must also include the nine digit zip code (zip code plus four digits) associated with the applicant address in box 8d of Form SF-424.

HUD will use the response to the factors below to rate, rank, and invite a subset of eligible applicants to submit a full application. The responses provided to the factors in your preliminary application are the only source of information that will be utilized to invite an applicant to submit a full application. See Section IV.A, Obtaining an Application Package, for information on the requirement for submitting an application.

HUD Facsimile Transmittal (HUD96011)

Third Party Documentation Acknowledgement of Application Receipt (HUD2993) if applicable.

2. Format and Form

Narratives and other attachments to your application must follow the following format guidelines:

- 1 page cover sheet
- 5 pages of narrative addressing rating factors
- 12 pt. Times New Roman font
- 8" x 11.5" paper
- 1" margins all around

C. DUNS Number and SAM Registration.

Please refer directly to Section IV.C of the General Section, available at Grants.gov or HUD's Funds Available page, [http:// portal.hud.gov /hudportal /HUD?src= /program_offices /administration /grants /fundsavail](http://portal.hud.gov/hudportal/HUD?src=/program_offices/administration/grants/fundsavail).

D. Application Submission Dates and Times.

The application deadline is 11:59:59 p.m. Eastern time on **July 16, 2015**.

Applications must be received no later than the deadline. Please refer to the General Section for more information about timely receipt of applications.

Submit your application to Grants.gov unless a waiver has been issued allowing you to submit your application in paper form or you are applying for the Continuum of Care program. The Continuum of Care application is submitted through HUD's e-snaps system. Instructions for submitting your application to Grants.gov are contained within the Application Package you downloaded from Grants.gov. Instructions for submitting your paper application will be contained in the waiver of electronic submission.

Your application must be **both received and validated** by Grants.gov. Your application is “received” when Grant.gov provides you a confirmation of receipt and an application tracking number. **If you do not see this confirmation and tracking number, your application has not been received.**

After your application has been received, your application still must be validated by Grants.gov. During this process, your application may be “validated” or “rejected with errors.” To know whether your application was rejected with errors and the reason(s) why, you must log into Grants.gov, select “Applicants” from the top navigation, and select “Track my application” from the drop-down list. If the status is “rejected with errors,” you have the option to correct the error(s) and resubmit your application before the Grace Period ends. **If your application was “rejected with errors” and you do not correct these errors, HUD will not review your application.** If your status is “validated” your application will be forwarded to HUD by Grants.gov.

1. Resubmitting an Application.

Before the submission deadline, applicants who choose to amend an application that has been validated by Grants.gov have several options:

- (1) an applicant may email the new or revised supporting materials to ApplicationSupport@hud.gov; or
- (2) an applicant may fax the additional supporting documents using the form HUD-96011.
- (3) an applicant may resubmit an entire, revised application via Grants.gov containing the new or changed material;

Whichever option is used, all materials must be received by the applicable deadline.

When submitting additional supporting documentation via email, the applicant must enter "Supporting Documentation" plus the Grants.gov application tracking number in the subject line of the email. (e.g., Subject: Supporting Documentation - GRANT12345678). If this information is not included, HUD will not be able to match the response to the application under review and the application may therefore be

rejected due to the deficiency.

When submitting additional supporting documentation by fax, the applicant must enter the document name in the box labeled "Name of Document Submitting" in form HUD96011. When submitting a fax, applicants must follow the fax requirements found elsewhere in this notice. If the fax transmittal form from the last application submitted is not the cover page to the applicant's response HUD will not be able to match the response to the application under review and the application may therefore be rejected due to the deficiency.

When resubmitting an application that was previously validated by Grants.gov, all documents faxed in support of the original submission must be either attached to the Grants.gov resubmission or faxed again using the form HUD-96011. If faxing, you must fax the materials, including materials faxed by a third party, after the resubmitted application has been validated by Grants.gov. All faxed materials must be received by the applicable deadline.

2. Grace Period for Grant.gov Submissions.

If an application is received by Grants.gov before the deadline, but is rejected with errors, applicants have a grace period of 24 hours beyond the application deadline to submit a corrected application that is received and validated by Grants.gov. Any application submitted during the grace period that does not meet the criteria above will not be considered for funding. There is no grace period for paper applications. See the General Section for more information about the grace period.

3. Late Applications.

An application received after the Program NOFA deadline date that does not meet the requirements of the grace period policy will be marked late, and will not be considered for funding.

E. Intergovernmental Review.

This program is not subject to Executive Order 12372, Intergovernmental Review of Federal Programs.

F. Funding Restrictions.

1. Indirect Costs. An indirect cost rate that is no greater than the approved rate negotiated with the applicant's federal cognizant agency (2 CFR 200, Appendix III, section C.6 as applicable) shall be used. When required the provisional rate established by the cognizant agency shall be used pending the establishment of a final rate for that period (2 CFR 200, Appendix III, section C.6 as applicable). The Office of Management and Budget (OMB) has published final guidance, 2 CFR part 200, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards. The OMB-issued uniform guidance supersedes, consolidates, and streamlines requirements from eight OMB Circulars: A-21 (Cost Principles for Educational Institutions), A-87 (Cost Principles for State, Local and Indian Tribal Governments), A-89 (Catalog of Federal Domestic Assistance), A-102 (Grants and Cooperative Agreements With State and Local Governments), A-110 (Uniform Administrative Requirements for Grants and Other Agreements with Institutions of Higher Education, Hospitals and Other Non-Profit Organizations), A-122 (Cost Principles for Non-Profit Organizations), and A-133 (Audits of States, Local Governments, and Non-Profit Organizations), and the guidance in OMB Circular A-50 (Audit Followup) on Single Audit Act follow-up.

This guidance is applicable to non-Federal entities as of December 26, 2014, with one exception for HUD grants. Non-Federal entities previously subject to 24 CFR part 84 (Uniform Administrative Requirements for Grants and Agreements with Institutions of Higher Education, Hospitals, and other Non-Profit Organizations) will have a one-year grace period to comply with the revised procurement standards in 2 CFR §§ 200.318–200.326.19 of 45 CFR §§ 200.318–200.326.

The "uniform crosswalk" available at the following link highlights major policy changes from the eight

OMB Circulars referenced above and 2 CFR part 200: <http://www.whitehouse.gov/sites/default/files/omb/fedreg/2013/uniform-guidance-crosswalk-from-predominate-source-in-existing-guidance.pdf>

- 2. Purchase of Real Property.** The purchase of real property is not an allowable cost under this program.
- 3. Purchase or Lease of Equipment.** The purchase or lease of equipment having a per unit cost in excess of \$5,000 is not an allowable cost, unless prior written approval is obtained from HUD.
- 4. Medical Treatment.** Medical treatment costs are not allowable under this program.
- 5. Profit.** For profit entities are not allowed to earn a profit on projects under this program.
6. You must comply with the Coastal Barrier Resources Act (16 U.S.C. § 3501).
7. You may not conduct lead-based paint or healthy home hazard control activities or related work that constitutes construction, reconstruction, repair or improvement (as referenced in Section 3(a)(4) of the Flood Disaster Protection Act of 1973 (42 U.S.C. §§ 4001-4128)) of a building or mobile home which is located in an area identified by the Federal Emergency Management Agency (FEMA) as having special flood hazards unless:
 - a. The community in which the area is situated is participating in the National Flood Insurance Program in accordance with the applicable regulations (44 CFR parts 59-79), or less than a year has passed since FEMA notification regarding these hazards; and
 - b. Where the community is participating in the National Flood Insurance Program, flood insurance on the property is obtained in accordance with section 102(a) of the Flood Disaster Protection Act (42 U.S.C. § 4012a(a)). You are responsible for assuring that flood insurance is obtained and maintained for the appropriate amount and term.
- 8. Construction Activities.** The amount of HUD Healthy Homes Technical Studies grant funds used for construction activities, i.e., to support or supplement a new housing construction or substantial rehabilitation project, may not exceed 20% of the total HUD funds awarded. Furthermore, the majority of any funds dedicated to construction activities supported by a Healthy Homes Technical Studies grant shall be spent for interventions not intended for lead hazard control.
9. Costs related to animal testing are not allowable under this program.

Lead Based Paint Requirements.

When providing housing assistance funding for purchase, lease, support services, operation, or work that may disturb painted surfaces, of pre-1978 housing, you must comply with the lead-based paint evaluation and hazard reduction requirements of HUD's lead-based paint rules (Lead Disclosure; and Lead Safe Housing (24 CFR part 35)), and EPA's lead-based paint rules (e.g., Repair, Renovation and Painting; Pre-Renovation Education; and Lead Training and Certification (40 CFR part 745)).

When providing education or counseling on buying or renting housing that may include pre-1978 housing, when required by regulation or policy, inform clients of their rights under the Lead Disclosure Rule (24 CFR part 35, subpart A), and, if the focus of the education or counseling is on rental or purchase of HUD-assisted pre-1978 housing, the Lead Safe Housing Rule (subparts B, R, and, as applicable, F - M).

V. Application Review Information

A. Review Criteria.

1. Rating Factors.

Threshold Requirements. Pre-applications that meet all of the threshold requirements will be eligible to be scored and ranked, based on the total number of points allocated for each of the rating factors described below in this section. The FY 2015 **General Section** identifies threshold requirements that must be met for an application to be eligible for review.

Award Factors. Each of the four factors is weighted as indicated by the number of points that are assigned to it. The maximum score that can be attained is 100. Applicants should be certain that each of these factors is adequately addressed in the project description and accompanying materials. To the extent feasible, include all of the needed information within your response to each rating factor. If your response to a particular rating factor cites information provided in your response to another rating factor, clearly indicate where the information is located so that the reviewer can easily locate it.

a. Capability and qualification of key personnel

Maximum Points: 20

- (1) Brief description of the academic qualifications and professional experience of key study personnel that is relevant to the proposed study (15 points).
- (2) Concise description of the qualifications and relevant professional experience of any partner organizations included in your proposal (note: these points will be redistributed to subfactor V.A.1.a.(1) if no partner organizations are included in your application) (5 points).

b. Need for proposed research

Maximum Points: 35

- (1) Key Research Gap Addressed and Importance of Study Focus Area (20 points).
Clearly and succinctly discuss the need for the proposed research based on the extent that it addresses a key research gap on a priority healthy homes issue as discussed in section III.C.1, citing published literature where possible. Explain why the knowledge gap that your proposed study will address is considered key (based on identified gaps in the literature and/or well documented knowledge from professional practice). The importance of the specific topic that your proposed study addresses can be demonstrated by factors such as (but not limited to): the severity of the illness/injury that is addressed; the prevalence of the housing condition or exposure; the economic impact of the issue that is addressed; the impact of the illness/injury on vulnerable populations; etc.
- (2) Strategic Value in Informing Policy or Practice (15 points).
Describe the strategic value of your proposed research with respect to its potential impact in informing policy or practice within the focus area of your proposed healthy homes study. Describe the potential application of your expected study findings in advancing the field of healthy homes.

c. Soundness of research design

Maximum Points: 35

- (1) Study Design and Objectives (20 points).
Clearly and succinctly describe the design of your proposed technical study, identifying major study milestones. Include sufficient detail to demonstrate feasibility and the likelihood that you will achieve the stated objectives. Identify the major objectives of your proposed study and any hypotheses to be tested (if testable hypotheses are appropriate for the proposed research). If appropriate, describe your plans for community involvement and for obtaining Institutional Review Board approval.
- (2) Efficiency of Design and Statistical Basis (8 points).
Describe why your proposed study design is an efficient approach to achieving your objectives (i.e., in the context of other study design options, such as using a cross sectional instead of a prospective study design, use of randomization, inclusion of a control or comparison group). Your

discussion should address the advantages of your chosen design and why it is most appropriate for your proposed study. Discuss the statistical basis for your proposed design (including the statistical power if appropriate).

(3) Data Collection and Analysis (7 points).

Describe your plans for ensuring the accuracy and validity of the data that will be collected.

Briefly describe the type of statistical analysis that will be conducted and your plans for the publication of study findings.

d. Proposed schedule and management plan

Maximum Points: 10

(1) Submit a timeline for the completion of major research activities and tasks and a description of actions that will be taken to ensure timely completion of the study. It is expected that the study, including drafting and submission of at least one article to a peer-reviewed journal, will be completed within three years of award, which is the maximum period of the cooperative agreement (5 point).

(2) Provide a brief description of your plan for managing and coordinating study activities (5 points).

2. NOFA Priorities.

HUD encourages applicants for funding to undertake programs and projects that contribute to HUD's NOFA Priorities. Applicants that undertake activities that result in achievement of specific NOFA Priorities listed below are eligible to receive priority points in the rating of their application. These points will be awarded only if the application otherwise meets or exceeds the Program's minimum fundable score based on the rating factors of this NOFA.

Priority points are not available for this program.

3. Bonus Points.

In support of certain inter-agency initiatives, HUD awards bonus points to projects where the preponderance of work will occur in a designated zone, community or region. **These points will be awarded only if the application otherwise meets or exceeds the Program's minimum fundable score based on the rating factors of this NOFA.**

Bonus points are not available for this program.

B. Reviews and Selection Process.

Rating and Ranking Criteria. Invitations to submit a full application will be made in rank order. Full applications will be solicited from up to 20 Healthy Homes Technical Study Program pre-applicants whose pre-applications scored at least 75 points. If more than the respective maximum number of pre-applications receives scores of 75 or greater, the 20 highest scoring Healthy Homes Technical Studies pre-applicants will be invited to submit full applications. HUD may increase the number of full applications solicited following the scoring of pre-applications if additional funds become available or if an unexpectedly large number of highly qualified pre-applications are received.

C. Anticipated Announcement and Award Dates.

Anticipated announcement date of successful pre-applicants is 49 days from the pre-application submission deadline date.

VI. Award Administration Information.

A. Award Notices.

Following the evaluation process HUD will notify successful applicants of their selection for funding. HUD will also notify all other applicants, whose applications were received by the deadline, that have not been chosen for award. Notifications will be sent by email, delivery receipt requested, to the person designated in item 8F of the SF424 and to the person listed as authorized representative in item 21 of the SF424.

1. Solicitation for Full Applications. A solicitation for full application from successful pre-applicants will be made through a second Notice (Healthy Homes Technical Studies Grant Program Full-Application) published on www.grants.gov. Successful applicants will also be contacted through the email addresses of the contact person and the authorizing official provided on Form SF 424. Eligibility will be limited to only applicants whose pre-applications meet the rating and ranking criteria as described above in section V.B.

2. Debriefing. Debriefing requests should be submitted via email to the Agency Contact identified in Section VII of this NOFA, following the procedures outlined in the FY 2015 **General Section**. Unsuccessful pre-applicants who request debriefing will be offered a brief written debriefing.

B. Administrative, National and Departmental Policy Requirements.

Certain Administrative, National and Departmental Policy Requirements apply to all HUD programs, including this NOFA. For a complete list of these requirements, see Section VI.B. of the General Section.

This Notice solicits pre-applications only. No awards will be made on the basis of this notice alone. An invitation to submit a full application is in no way a guarantee that the full application will ultimately be awarded. Post-award requirements will be published in the second announcement (Healthy Homes Technical Studies Grant Program Full-Application).

C. Reporting.

Please refer to Section VI of the General Section for a description of the general reporting requirements applicable to all HUD NOFAs.

Not applicable at this time.

Questions regarding specific program requirements should be directed to the point of contact listed in Section VII below.

VII. Agency Contact(s).

HUD staff will be available to provide clarification on the content of this NOFA. Please note that HUD staff cannot assist applicants in preparing their applications. Questions regarding specific program requirements should be directed to the point of contact listed below.

For programmatic questions you may contact Dr. Peter Ashley, Office of Lead Hazard Control and Healthy Homes, at 202-402-7595 or via email at Peter.J.Ashley@hud.gov. For grants administrative questions, you may contact Ms. Nadine Heath, Office of Lead Hazard Control and Healthy Homes, at telephone 202- 402-7680 or via email at Nadine.L.Heath@hud.gov. If you are a hearing- or speech-impaired person, you may reach the above telephone numbers through TTY by calling the toll-free Federal Relay Service at 1-800-877-8339.

Questions concerning the General Section should be directed to the Office of Strategic Planning and Management, Grants Management and Oversight Division at 202-708-0667 (this is not a toll-free number).

Persons with hearing or speech impairments may access these numbers via TTY by calling the toll-free Federal Relay Service at 800-877-8339.

VIII. Other Information.

Paperwork Reduction Act Statement. The information collection requirements in this notice have been approved by OMB under the Paperwork Reduction Act of 1995 (44 U.S.C.3501-3520). In accordance with the Paperwork Reduction Act, HUD may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the collection displays a valid OMB control number. Each Program NOFA will identify its applicable OMB control number unless its collection of information is excluded from these requirements under 5 CFR part 1320.

A Finding of No Significant Impact (FONSI) with respect to the environment has been made for this NOFA in accordance with HUD regulations at 24 CFR Part 50, which implement section 102(2)(C) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)(C)). The FONSI is available for inspection at HUD's Funds Available web page at http://portal.hud.gov/hudportal/HUD?src=/program_offices/administration/grants/fundsavail.

Appendix.

FY 2015 Healthy Homes Technical Studies

Notice of Fund Availability

APPENDIX A: Key Residential Health and Safety Hazards

The following briefly describes the residential health and injury hazards HUD considers key targets for intervention:

1. Allergens and Asthma: In 2005, the CDC estimated that over 22.2 million Americans have asthma with an associated annual cost of more than \$13 billion. Asthma is now recognized as the leading cause of school and work absences, emergency room visits, and hospitalizations. For sensitized children, exposure to antigens from dust mites, certain pets, and cockroaches has been associated with more severe asthma. There is a preponderance of evidence showing a dose-response relationship between exposure and prevalence of asthma and allergies; some evidence also indicates that exposure to antigens early in life may predispose or hasten the onset of allergies and asthma. Dust mites have been identified as the largest trigger for asthma and allergies. A recently published study of children with atopic (allergic) asthma from seven major U.S. cities reported that over half of the children were allergic to cockroach and dust mite allergen (approximately 70% and 63%, respectively), with approximately 50% of the children allergic to mold (Morgan et al. 2004). Significant fractions of children also tested positive for allergy to cat, rodent and dog allergens. This is consistent with other studies that have found that cockroach tends to be the dominant allergen among asthmatic children living in the inner-city, whereas allergy to dust mite allergens appears to dominate among children living in most suburban environments. While children are the population most at risk for developing asthma, there is a growing need to address the onset of new cases in older adults, and to examine how their risk factors might differ from those of children (Selgrade et al. 2006).

HUD-funded researchers recently reported a significant association between a measure of mold exposure (i.e., an index composed of DNA-based measurement of specific fungi in house dust samples) during the 1st year of life and the diagnosis of asthma at age 7 (Reponen et al., 2011). In a follow-up paper, the researchers identified three specific mold species that were significantly associated with asthma

development among the study cohort at age 7 (Reponen et al., 2102).

Interventions known to have beneficial effects include the installation of impervious mattress and pillow covers, which can reduce allergen exposure by 90 percent. Other dust mite control measures include dehumidification, laundering bedding in hot water, specialized cleaning (dry steam or use of a HEPA vacuum), and removal of carpets and other materials that accumulate dust and are difficult to clean (e.g., dust sinks). Providing residents with education and instruction on cleaning with repeat visits by outreach workers has been shown to result in significant reduction in levels of dust mite and cockroach allergens in floor dust (Takaro et al. 2004; Morgan et al. 2004). For these same studies, researchers also reported significant reductions in asthma symptoms among children living in the intervention group when compared to the control group. A recent meta-analysis found that dust control interventions can also have a preventative effect. Based on five longitudinal studies, the researchers reported an approximately twenty percent decrease in risk of physician-diagnosed asthma for individuals in homes with dust control interventions, compared to those in control homes (Russell et al. 2007).

Interventions emphasizing the mitigation of mold and moisture problems in the homes of asthmatic children have also been shown to be effective. In one HUD-supported study, asthmatic children living in homes in which nontrivial mold growth was identified, were randomized into two groups, with one group receiving interventions to address the residential mold/moisture problems. The remediation group showed statistically significant reductions in symptom days, symptom score, and the need for acute care (Kercsmar et al. 2006). The mean cost of home interventions was \$3,458 per home, including the cost of addressing lead-based paint hazards.

Moving families with an asthmatic child into new housing designed to reduce exposure to asthma triggers has also been shown to be effective. HUD-supported research conducted by Takaro et al. (2010) demonstrated improvements in asthma symptoms and other indicators for subjects who lived in asthma-friendly Breathe-Easy Homes in addition to receiving traditional in-home asthma education and outreach. Breathe-Easy Homes address multiple asthma triggers by incorporating comprehensive enhancements into the physical structure, including moisture-reduction features, low dust-generating and chemical-emitting finishes, and advanced fresh-air ventilation systems. The authors reported significant improvements in primary (e.g., symptom-free days, FEV1) and secondary (days rescue medicine used, nights with symptoms) outcomes among BEH occupants.

2. Asbestos: Asbestos is a mineral fiber that has been used commonly in a variety of building construction materials and household products for insulation and as a fire-retardant. The Environmental Protection Agency (EPA) and the Consumer Product Safety Commission (CPSC) have banned most asbestos products. Manufacturers have also voluntarily limited uses of asbestos. Today, asbestos is most commonly found in older homes in pipe and furnace insulation materials, asbestos shingles, millboard, textured paints and other coating materials, and floor tiles. Elevated concentrations of airborne asbestos can occur when asbestos-containing materials (ACMs) are disturbed by cutting, sanding or other remodeling activities. Improper attempts to remove these materials can release asbestos fibers into the air in homes, increasing asbestos levels and endangering the people living in those homes. The most dangerous asbestos fibers are too small to be visible. After they are inhaled, they can remain and accumulate in the lungs. Asbestos can cause lung cancer, mesothelioma (a cancer of the chest and abdominal linings), and asbestosis (irreversible lung scarring that can be fatal). Most people with asbestos-related diseases were exposed to elevated concentrations on the job; some developed disease from exposure to clothing and equipment brought home from job sites. As with radon, dose-response extrapolations suggest that lower level exposures, as may occur when asbestos-containing building materials deteriorate or are disturbed, may also cause cancer.

Intact asbestos-containing materials are not a hazard; they should be monitored for damage or deterioration and isolated if possible. Repair of damaged or deteriorating ACMs usually involves either sealing (encapsulation) or covering (enclosure) it. Repair is usually cheaper than removal, but it may make later removal of asbestos more difficult and costly. Repairs should only be done by a trained professional

certified to handle asbestos safely and can cost from a few hundred to a few thousand dollars; removal can be more expensive.

3. Combustion Products of Heating and Cooking Appliances: Burning of oil, natural gas, kerosene, and wood for heating or cooking purposes can release a variety of combustion products of health concern. Depending upon the fuel, these may include carbon monoxide (a chemical asphyxiant), oxides of nitrogen (respiratory irritants), polycyclic aromatic hydrocarbons (e.g., the carcinogen benzo[a]pyrene), and airborne particulate matter. Exposure to carbon monoxide, an odorless gas, can be fatal. Nitrogen dioxide can irritate or damage the respiratory tract, and sulfur dioxide can irritate the eyes, nose and respiratory tract. Improper venting and poor maintenance of heating systems and cooking appliances can dramatically increase exposure to combustion products. As the principles of green construction and rehabilitation become more popular, and homes become increasingly airtight to improve energy efficiency, there are concerns about potential indoor air quality trade-offs (Selgrade et al. 2006).

Experts recommend having combustion heating systems inspected by a trained professional every year to identify blocked openings to flues and chimneys, cracked or disconnected flue pipes, dirty filters, rust or cracks in the heat exchanger, soot or creosote build-up, and exhaust or gas odors. Installing a carbon monoxide detector is also recommended; however, such a detector will not detect other combustion by-products.

4. Environmental Tobacco Smoke (ETS): ETS (also known as SecondHand Smoke (SHS)) results from the combustion of tobacco products and exhalation of inhaled tobacco smoke by active smokers. Tobacco smoke contains as many as 7000 individual compounds, including formaldehyde, carbon monoxide, nicotine, nitrosamines and polyaromatic hydrocarbons, with nearly 70 compounds identified as carcinogens (US DHHS, 2010; IARC, 2004). Exposure to ETS has been associated with numerous adverse health effects, including multiple types of cancer, coronary heart disease, asthma, respiratory tract infections and others. Additionally, exposure to ETS has been estimated to cause approximately 50,000 excess deaths annually in the U.S., including sudden infant death syndrome (Cal EPA, 2005). Children are particularly vulnerable to the effects of ETS. The U.S. Surgeon General's office reported that approximately 22 million children may be exposed to ETS in the U.S. (US DHHS, 2006).

Exposure to ETS can be a problem even in rooms or units where smoking does not occur. Van Deusen et al. (2009) reported that levels of particulate matter (an indicator of tobacco smoke) were elevated in rooms within a home that were distant from the primary room where smoking occurred. In addition, ETS also migrates between units in multi-unit buildings. Kraev et al. (2009), measured nicotine in air and air exchange rates in individual units of a lower-income multi-unit building in the Boston area and found measurable levels of nicotine in units where no smoking occurred; King et al. (2010) reported similar results in nonsmoking units and hallways as part of a study in Buffalo. Wilson et al. (2010) analyzed measurements of cotinine exposure in children (an indicator of ETS exposure) and found that those living in multifamily housing had higher levels than children in detached housing, indicating the contribution from ETS migrating between units of multifamily housing.

5. Infiltration of Ambient Pollutants: Personal exposure to airborne contaminants is a function of indoor and outdoor exposures. For people living in areas that are near roadways or a point source generating hazardous pollutants, for example, the infiltration of ambient pollutants has the potential to dominate personal exposures. Logue et al. (2010, 2011) identified a number of pollutants that present significant health risks in indoor environments; however, many of those pollutants are found also in the ambient environment suggesting infiltration of ambient air pollution may be of concern when identifying exposure risks to occupants of a home. Meng et al. (2009) reported in the Relationships of Indoor, Outdoor, and Personal Air (RIOPA) study across three U.S. cities that approximately 60% of indoor PM_{2.5} originated from the outdoors. Allen et al. (2012) identified the frequency of air conditioner use and the opening of windows as predictors of ambient pollution infiltration during the summer months, while temperature and the use of forced air heat were predictors during winter months. Studies on practical control technologies and to reduce the infiltration of outdoor air pollutants into homes are needed.

6. Insect and Rodent Pests: The observed association between exposure to cockroach allergen and asthma severity has already been noted above. In addition, cockroaches may act as vehicles to contaminate environmental surfaces with certain pathogenic organisms. Rodents can transmit a number of communicable diseases to humans, either through bites, arthropod vectors, or exposure to aerosolized excreta. In addition, humans can become sensitized to proteins in rodent urine, dander and saliva. Such sensitization may contribute to asthma severity among sensitized individuals. Insect and rodent infestations are frequently associated with substandard housing that makes them difficult to eliminate. Even though studies have shown that bedbugs do not transmit any human diseases, CDC, EPA and USDA have declared bedbugs as pest of significant public health importance. They are known to have several negative physical and mental health effects as well as economic consequences. Research indicates that the presence of bedbugs and their bites can result in adverse physical and mental health effects (e.g., infections, anxiety, insomnia, etc.) as well as economic consequences. These include allergic reactions to their bites, secondary infections and expensive control measures. Treatment of rodent and insect infestations often includes the use of toxic pesticides that may present hazards to occupants (see below). Integrated pest management (IPM) for rodents and cockroaches is recommended by federal agencies, including the U.S. EPA, HUD, and the CDC because it minimizes the use of toxic pesticides and instead emphasizes environmental controls such as elimination of harborages and removing access to food and water. This recommendation was recently confirmed by an expert panel that systematically reviewed the literature on this topic (Sandel et al., 2010). According to the expert panel, sufficient evidence was available to support the implementation of an IPM approach as a way of reducing pesticide residues in the home. A reduction in residential pesticide exposure subsequently would ultimately lead to a reduction in the prevalence of pesticide-associated health issues.

7. Lead-Based Paint and its Hazards: Exposure to lead, especially from deteriorating lead-based paint, remains one of the most important and best-studied of the household environmental hazards to children. Although blood lead levels (BLLs) have fallen nationally, a large reservoir of lead remains in housing. Recent results from CDC's Fourth National Health and Nutrition Examination Survey (NHANES 2002) demonstrate that the national geometric mean blood lead concentration of children aged 1-5 years has decreased from 2.3 g/dL in 1991 to 1.6 g/dL in the period 1999-2002 (CDC 2005). During the 1999-2002 survey period, children aged 1-5 years had the highest prevalence of elevated BLLs (1.6%), so that approximately 310,000 children aged 1-5 years remained at risk for exposure to harmful lead levels. Overall, by race/ethnicity, non-Hispanic blacks and Mexican Americans had higher percentages of elevated BLLs (1.4% and 1.5%, respectively) than non-Hispanic whites (0.5%). Among subpopulations, non-Hispanic blacks aged 1-5 years and aged >60 years had the highest prevalence of elevated BLLs (3.1% and 3.4%, respectively). As BLLs have dropped over the years, recent analyses have examined the relationship between relatively low blood lead concentrations (<10g/dL) and cognitive functioning in representative samples of U.S. children and adolescents, and have found evidence that suggests that deficits in cognitive and academic skills associated with lead exposure have no threshold (Lanphear et al., 2000; Canfield et al., 2003). These findings clearly support the importance of primary prevention with respect to childhood lead exposure.

Despite dramatic reductions in blood lead levels over the past 15 years, lead poisoning continues to be a significant health risk for young children. Based on results from the HUD- and NIEHS-funded National Survey of Lead and Allergens in Housing (Jacobs et al., 2002), it is estimated that approximately 40 percent of housing units (38 million) in the United States contain lead-based paint. It is further estimated that 25 percent of the nation's housing stock (24 million housing units) have one or more significant lead-based paint hazards (i.e., deteriorated lead-based paint, lead-contaminated dust, or lead-contaminated soil). 1.2 million housing units were found to pose the highest risk of lead poisoning because they housed low-income families with children less than six years of age.

Among HUD grantees, lead hazard control (LHC) costs tend to range from \$500 to \$15,000 per unit, with a median cost of \$7,960. Corrective measures include paint stabilization, enclosure and removal of certain building components coated with lead paint. cleanup and clearance testing, which ensures the unit is safe

building components coated with lead paint, cleanup and 'clearance testing, which ensures the unit is safe for young children. In addition, acute injuries to children have been well documented, most notably in instances involving sanding or stripping of lead-based paint or visible deterioration of lead-based painted residential building components combined with children who exhibit pica tendencies.

Evaluation of lead hazard control interventions conducted by recipients of HUDs lead hazard control grants found that interventions were effective in significantly reducing pre-intervention dust-lead levels on floors and window surfaces up to six years following intervention (Wilson et al. 2006). More intensive treatments were found to significantly reduce dust lead loadings on window sills and troughs compared to lower level treatments, however, no significant differences in dust-lead loadings on floors were reported. Sandel et al. (2010) confirmed these general findings, citing that lead hazard control interventions were effective in reducing exposures to lead exposures. The authors concluded that the evidence was sufficient to promote lead hazard control interventions as a means of reducing lead exposure and associated health effects, particularly in children.

8. Mold and Moisture: An analysis of several pulmonary disease studies estimates that 25 percent of airways disease, and 60 percent of interstitial lung disease may be associated with moisture in the home or work environment. Moisture is a precursor to the growth of mold and other biological agents, which is also associated with respiratory symptoms. An investigation of a cluster of pulmonary hemosiderosis (PH) cases in infants showed PH was associated with a history of recent water damage to homes and with levels of the mold *Stachybotrys atra* (SA) in air and cultured surface samples, although this association could not be considered a causal relationship. Associations between exposure to SA and 'sick building' symptoms in adults have also been observed. Other related toxigenic fungi have been found in association with SA-associated illness and could play a role. For sensitive individuals, exposure to a wide variety of common molds may also aggravate asthma. A review by an expert committee convened by the Institute of Medicine found sufficient evidence for an association between exposure to mold and other agents in damp indoor environments and asthma symptoms in sensitized persons, upper respiratory tract symptoms, cough, and wheeze (IOM 2004). The committee also found limited or suggestive evidence for an association between damp indoor environments and the development of asthma.

Addressing mold problems in housing requires coordination among the medical, public health, microbiological, housing, and building science communities. Krieger et al., (2010) report that an expert panel review of relevant literature on this topic found that a combined approach of eliminating active leaks and moisture intrusion into the home while also removing moldy items already in place was an effective intervention strategy for reducing exposure to mold and associated respiratory health effects. The panel concluded that there was sufficient evidence to support implementation of a coordinated intervention strategy for mold and moisture problems.

The cost of mold/moisture-related intervention work (e.g., IPM, clean and tune furnace, remove debris, vent clothes dryer, cover dirt floor with impermeable vapor barrier) is a few hundred dollars, unless major modification of the ventilation system or structural repairs is needed. For example, in Cleveland, mold interventions, including repairs to ventilation systems and basement flooring, in the most heavily contaminated homes range from \$500 to \$5,000, with some costs also being dedicated to LHC simultaneously through its lead and asthma program.

9. Pesticide Residues: According to the EPA, 75 percent of U.S. households used at least one pesticide product indoors during the past year. Products used most often are insecticides and disinfectants. Another study suggests that 80 percent of most people's exposure to pesticides occurs indoors and that measurable levels of up to a dozen pesticides have been found in the air inside homes. The amount of pesticides found in homes appears to be greater than can be explained by recent pesticide use in those households; other possible sources include contaminated soil or dust that migrates in from outside, stored pesticide containers, and household surfaces that collect and then release the pesticides. Pesticides used in and around the home include products to control insects (insecticides), termites (termiteicides), rodents (rodenticides), molds and fungi (fungicides), and microbes (disinfectants). In 2005, the American

Association of Poison Control Centers reported that some 1.6 million children were involved in common household pesticide poisonings or exposures (AAPCC 2005). In households with children less than five years of age, almost half stored at least one pesticide product within the reach of children. Exposure to high levels of cyclodiene pesticides, commonly associated with misapplication, has produced various symptoms, including headaches, dizziness, muscle twitching, weakness, tingling sensations, and nausea. In addition, the EPA is concerned that cyclodienes might cause long-term damage to the liver and the central nervous system, as well as an increased risk of cancer. A recent expert panel review (Sandel et al., 2010) found that implementation of an integrated pest management approach was an effective intervention for reducing pesticide residues in the home and should be implemented in lieu of pesticide application for reducing pests.

There are available data on hazard evaluation methods and remediation effectiveness regarding pesticide residues in the home environment.

10. Radon: The National Academy of Sciences estimates that approximately 15,000 cases of lung cancer per year are related to radon exposure. Epidemiologic studies of miners exposed to high levels of radon in inhaled air have defined the dose response relation for radon-induced lung cancer at high exposure levels. Extrapolation of these data has been used to estimate the excess risk of lung cancer attributable to exposure to radon gas at the lower levels found in homes. These estimates indicate that radon gas is an important cause of lung cancer deaths in the U.S. Excessive exposures are typically related to home ventilation, structural integrity and location.

Radon measurement and remediation methods are well developed, and the EPA recommends that every home be measured for radon. Sandel et al. (2010) conducted a review of the literature and concluded that active soil depressurization beneath the foundation of the structure was an effective method for reducing radon exposures in the home. EPA estimates that materials and labor costs for radon reduction in an existing home are \$800-\$2,500. Including radon resistant techniques in new home construction costs \$350-\$500, and can save up to \$65 annually in energy costs, according to the EPA.

11. Semi-Volatile Organic Compounds (SVOCs): Several SVOCs are emerging as potential health risks in the home due to their ubiquitous nature in consumer and building products that are produced in high volume and used worldwide. SVOCs exist partially in the gas-phase and emit their respective chemical gradually over time, particularly in the presence of increased temperatures. Two compounds of increasing concern are phthalates and polybrominated diphenyl ethers (PBDE). During recent years, phthalate and PBDE compounds have received increased scrutiny due to their potential cumulative health risks and increased use in consumer products. PBDE are found in flame retardants, plasticizers, and flexible foams and may also be found in children's products. Phthalates are used as plasticizers and are most notable for their use in children's products, such as teething rings, food contact items and other flexible polyvinyl chloride (PVC)-based products. The health effect most widely associated with phthalates exposures are reproductive effects, while PBDE have shown toxicity potential in liver, thyroid and neurodevelopment systems.

Exposure to phthalates may occur via many different routes: inhalation, ingestion, water and soil. It may occur in various environments from the home to the work place. Children are reported to have the highest exposures to phthalates among all age groups (CDC, 2005), along with lower socioeconomic status households (Zota et al., 2008). Both phthalates and PBDE have been found in house dust; exposure to dust has been reported as the primary route of exposure for PBDE (Wilford et al., 2005; Zota et al., 2008). The presence of both phthalates and PBDE in house dust presents potential risks particularly to young children. Several house characteristics, including older age of house, water leakage and use of PVC in flooring materials, have been identified as significant indicators for potential phthalates exposures (Bornehag et al., 2005). The increased concern over phthalates and PBDE has led to increased regulatory scrutiny. In 2008, the U.S. Consumer Product Safety Commission issued a prohibition on the use of several phthalate compounds above threshold levels in children's toys and items used for childcare. Furthermore, PBDE have been banned at the state level, including in California and Washington.

12. Take-Home Hazards from Work/Hobbies and Work at Home: When the clothing, hair, skin, or shoes of workers become contaminated with hazardous materials in the workplace, such contaminants may inadvertently be carried to the home environment and/or an automobile. Such 'take-home' exposures have been demonstrated, for example, in homes of lead-exposed workers. In addition, certain hobbies or workplaces located in the home may provide an especially great risk of household contamination.

Control methods include storing and laundering work clothes separately, and showering and changing clothes before leaving work or immediately after arriving home. Once a home becomes contaminated, cleaning floors and contact surfaces and replacing furnishings may be necessary to reduce exposures.

13. Third Hand Smoke (THS): Adverse health effects from exposure to active smoking and passive smoking (ETS or SHS) are well documented. Tobacco smoke contains as many as 7000 individual compounds, including formaldehyde, carbon monoxide, nicotine, nitrosamines and polyaromatic hydrocarbons, with nearly 70 compounds identified as carcinogens (US DHHS, 2010; IARC, 2004). THS refers to residual pollutants originating from tobacco smoke that persist in dust and adsorb onto surfaces, ultimately re-emitting pollutants into the gaseous phase over time after the smoke has dissipated (Hoh et al., 2012). Pollutants that are re-emitted also have the potential to interact with the local atmosphere resulting in physical and chemical transformation of original contaminants into secondary pollutants, some of which may be more hazardous than the original pollutant (Matt et al., 2011). HUD-funded research also found that the presence of smokers in a home was a significant predictor of both children's blood-lead levels and surface dust-lead loading (Dixon et al., 2009; Gaitens et al., 2009). Exposure to THS occurs most often by inhalation, but may also occur through ingestion of contaminated dust, or through dermal contact with surfaces that have residual contamination. While this is an emerging area of research with relatively sparse information to date, there is initial evidence to suggest that THS may be a concern, particularly for children who have a higher frequency of hand-to-mouth activity that might increase their exposure by ingestion and dermal routes, in addition to inhalation. Matt et al. (2010) reported that THS residue persisted in homes even after they had been cleaned and prepared for the next tenant.

14. Unintentional Injuries/Fire: In 1997, nearly 7 million persons in the U.S. were disabled for at least one full day by unintentional injuries received at home; for children younger than 15 years of age, unintentional injury is now the leading cause of death and disability. A recent HUD-supported study of deaths among US children and adolescents from 1985 to 1997 found that an average of 2,822 unintentional deaths occurred annually from residential injuries (Nagaraja et al., 2005). The highest death rates were attributable to fires, submersion or suffocation, and poisoning. Black children were two times more likely to die from residential injuries than white children. The elderly are also at an elevated risk for residential injuries. Home visitation protocols have been shown to be effective in reducing exposure to injury hazards. The 'add-on' cost of injury prevention measures, when combined with other housing interventions are estimated at about \$100 per unit. This includes the cost of some injury prevention devices (e.g., smoke alarms, electrical socket covers, etc.). DiGuseppi et al. (2010) reported on an expert panel review of seventeen interventions intended to reduce injuries due to residential deficiencies. Installed and properly working smoke detectors were determined to be an effective intervention that should be implemented for reducing fire-related injuries. This panel deemed four-sided pool enclosures efficacious and pre-set safe hot waters heaters sufficient for reducing residential-based injuries.

APPENDIX B: Relevant Publications, Guidelines and Other Resources

The sources below are provided for informational purposes only. By inclusion in this Appendix, HUD is not necessarily endorsing any of the research, findings, or policies. To secure any of the documents listed, call the telephone number provided. If you are a hearing-or speech-impaired person, you may reach the telephone numbers through TTY by calling the toll-free Federal Relay Service at 800-877-8339. Several

of these references can be downloaded from the Internet without charge from the HUD Office of Healthy Homes and Lead Hazard Control's Internet site, www.hud.gov/offices/lead.

1. REGULATIONS:

a. Worker Protection: Occupational Safety and Health Administration (OSHA) publications listed below can be purchased by calling either OSHA Regulations at 202-693-1888 (OSHA Regulations) (this is not a toll-free number) or the Government Printing Office (GPO) at 202-512-1800 (this is not a toll-free number). OSHA standards and other publications can be downloaded or purchased (as applicable) from OSHA's publication web page, <http://www.osha.gov/pls/publications/pubindex.list>. A broad range of information on construction and other worker protection requirements and guidelines is available from OSHA's home page, <http://www.osha.gov/> and from <http://www.osha.gov/SLTC/lead/>.

b. Waste Disposal. A copy of the EPA regulations at 40 CFR parts 260-268 can be purchased by calling 800-424-9346, or, from the Washington, DC, metropolitan area, 703-412-9810 (this is not a toll-free number). The regulations can also be downloaded without charge from the EPA website at <http://www.epa.gov/lead/pubs/fslbp.htm>.

c. Lead.

i. Requirements for Lead-Based Paint Activities in Target Housing and Child-Occupied Facilities; Final Rule: 40 CFR part 745 (EPA) (Lead Hazard Standards, Work Practice Standards, EPA and State Certification and Accreditation Programs for those engaged in lead-based paint activities) can be purchased by calling the Toxic Substances Control Act (TSCA) Assistance Service at 202-554-1404 (this is not a toll-free number). The rule and guidance can be downloaded from the Internet without charge at <http://www.epa.gov/lead/pubs/leadcert.htm>.

ii. Requirements for Notification, Evaluation and Reduction of Lead-Based Paint Hazards in Federally Owned Residential Property and Housing Receiving Federal Assistance; Final Rule: 24 CFR part 35, subparts B through R, published September 15, 1999 (64 FR 50201) (HUD) can be purchased by calling the NLIC's toll-free number (800-424-LEAD) or downloaded without charge from the HUD website at <http://www.hud.gov/offices/lead/library/enforcement/LSHRFinal21June04.pdf>.

iii. Requirements for Disclosure of Information Concerning Lead-Based Paint in Housing, 24 CFR Part 35, Subpart A (HUD, Lead-Based Paint Disclosure Rule) by calling the NLICs toll-free number (800-424-LEAD). The rule, guidance, pamphlet and disclosure formats can be downloaded from the HUD website at http://www.hud.gov/offices/lead/library/enforcement/24CFR35_SubpartA.pdf.

iv. U.S. Environmental Protection Agency. Lead; Identification of Dangerous Levels of Lead; Final Rule at 66 FR 1205-1240 (January 5, 2001). This rule and guidance can be obtained without charge by calling the NLIC's toll-free number (800-424-LEAD) or by calling the TSCA Assistance Service at: 202-554-1404 (this is not a toll-free number). The rule and guidance can be downloaded from the EPA website at <http://www.epa.gov/lead/pubs/leadhaz.htm>.

v. U.S. Environmental Protection Agency. Lead; Renovation, Repair, and Painting Program; Final Rule at 73 FR 21692- 21769 (April 22, 2008). As of April 22, 2011, the rule was fully implemented. This rule and guidance can be obtained without charge by calling the NLIC's toll-free number (800-424-LEAD) or by calling the TSCA Assistance Service at: 202- 554-1404 (this is not a toll-free number). The rule and guidance can be downloaded from the EPA website at <http://www.epa.gov/lead/pubs/renovation.htm>.

2. GUIDELINES AND OTHER RESOURCES:

a. Lead

Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing; HUD. The Guidelines can be downloaded from the HUD website without charge at <http://www.hud.gov/offices/lead>

[/lbp /hudguidelines /index.cfm.](#)

Preventing Lead Poisoning in Young Children; Centers for Disease Control, August, 2005. These guidelines can be obtained without charge by calling the CDC toll free number at 888- 232-6789. The guidelines can also be downloaded from <http://www.cdc.gov /nceh/lead /publications/ PrevLeadPoisoning .pdf>.

Screening Young Children for Lead Poisoning: Guidance for State and Local Public Health Officials, November 1997; Centers for Disease Control and Prevention (CDC). These guidelines can be obtained without charge by calling the CDC toll free number at 888-232-6789 or they can be downloaded from <http ://www.cdc.gov /nceh /lead /publications /screening.htm>.

b. Green Building

American Lung Association of the Upper Midwest. *Health House Builder Guidelines*. Available: <http ://www.healthhouse.org /build /2008HHbuilder guidelines.pdf>.

U.S. Department of Energy. *Builders Challenge: Requirements for Builders*. Available: <http://www1.eere .energy.gov /buildings /challenge /requirements.html>.

Enterprise Community Partners. *Green Communities Criteria*. Available: <http://www.greencommunitie sonline.org/>.

National Association of Home Builders. *Green Building Program*. Available: <http://www.nahbgreen.org/>.

U.S. Environmental Protection Agency. *Indoor air PLUS Program*. Available: <http://www.epa.gov/ indoo rairplus/>.

U.S. Green Building Council. *LEED for Homes*. Available: <http://www.usgbc.org/ DisplayPage.aspx ?CMSPageID=147>.

c. IPM

IPM: A Guide for Affordable Housing:

<http://www.stoppests.org/ what-is-ipm/guide/>

d. Bed Bugs

Draft Federal Bed Bug Strategy developed by the Federal Bed Bug Work Group:

<http://www.regulations.gov/ #!documentDetail; D=EPA-HQ- OPP-2013- 0537-0002>

3. REPORTS:

a. Lead

Putting the Pieces Together: Controlling Lead Hazards in the Nation's Housing, (Summary and Full Report); HUD, July 1995. A copy of this summary and report can be purchased by calling 800-245-2691 toll free or downloaded from <http://archives.hud.gov/ funding/2005 /appendices /appendixc-hhd.doc>.

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b. Healthy Homes

Healthy Housing Reference Manual; HUD/CDC, 2006. A copy of this manual can be downloaded from the CDC website without charge at <http://www.cdc.gov/nceh/publications/books/housing/housing.htm>.

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4. PAPERS

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