

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

[Docket No. FR-4516-N-01]

Notice of Funding Availability for the HUD Healthy Homes Initiative

AGENCY: Office of the Director of Lead Hazard Control, Office of the Secretary, HUD.

ACTION: Notice of Funding Availability (NOFA).

SUMMARY: *Purpose of the Program.* The purpose of the Healthy Homes Initiative is to demonstrate cost effective, preventive measures to correct multiple safety and health hazards in the home environment which produce serious diseases and injuries in children.

Available Funds. Approximately \$3.5 million.

Eligible Applicants. Research institutions, not-for-profit institutions, and for-profit firms located in the U.S., State and local governments, and Federally-recognized Indian Tribes. For-profit firms are not allowed to include a fee in the cost proposal (i.e., no profit can be made from the project). Federal agencies and federal employees are not eligible to apply for this program.

Application Deadline. September 23, 1999.

Match. None.

If you are interested in applying for funding under this initiative, please review the following additional information.

ADDITIONAL INFORMATION:
I. Application Due Date, Application Kits, Further Information, and Technical Assistance

Application Due Date. Submit an original and four copies of your completed application on or before 12:00 midnight Eastern Time on September 23, 1999.

Address for Submitting Applications. *For Mailed Applications.* The address for mailed applications is: Department of Housing and Urban Development, Office of Lead Hazard Control, 451 Seventh Street, SW, Room P3206, Washington, D.C. 20410.

For Overnight/Express Mail or Hand Carried Applications. The address for applications that are hand carried or sent via overnight delivery is: HUD Office of Lead Hazard Control, Suite 3206, 490 L'Enfant Plaza SW, Washington, D.C. 20024.

For Application Kits. You may obtain an application kit from the HUD Office of Lead Hazard Control at the address shown above. When requesting an application kit, please refer to "Healthy Homes Initiative NOFA." Please be sure

to provide your name, address (including zip code), and telephone number (including area code). Alternatively, you may obtain an application kit by downloading it from the internet at <http://www.hud.gov>.

For Further Information Contact. Ms. Ellen Taylor, Planning and Standards Division, Office of Lead Hazard Control, at the address above; telephone (202) 755-1785, extension 116, or Ms. Karen Williams, Grants Officer, extension 118 (these are not toll-free numbers). Hearing- and speech-impaired persons may access the above telephone numbers via TTY by calling the toll-free Federal Information Relay Service at 1-800-877-8339.

II. Amount Allocated

Approximately \$3.5 million will be available to fund demonstration projects in FY 1999. Grants will be awarded on a competitive basis following evaluation of all proposals according to the Rating Factors described in section V(B). HUD anticipates that approximately 3 to 5 grants will be awarded, ranging from approximately \$250,000 to approximately \$2,500,000.

III. Program Description, Eligible Applicants, and Eligible Activities
(A) Program Description

(1) Background. In the FY 1999 Budget, HUD proposed a Healthy Homes Initiative (sometimes referred to as the "Initiative" or "HHI") that would protect children from housing conditions responsible for multiple diseases and injuries. The Initiative departs from the more traditional approach of attempting to correct one hazard at a time (e.g., asbestos, radon).

The Healthy Homes Initiative builds upon HUD's existing housing-related health and safety issues, including lead hazard control, building structural safety, electrical safety, and fire protection to address multiple childhood diseases and injuries related to housing in a more coordinated fashion. A coordinated effort is feasible because a limited number of building deficiencies contribute to many hazards. Substantial savings are possible using this approach, because separate visits to a home by an inspector, public health nurse, or outreach worker if independently done can add significant cost to efforts to eliminate hazards.

In addition to deficiencies in basic housing facilities that may impact health, changes in the U.S. housing stock and more sophisticated epidemiological methods and biomedical research have led to the identification of new and often more

subtle health hazards in the residential environment. While such hazards will tend to be found disproportionately in housing that is substandard (e.g., structural problems, lack of adequate heat, etc.), such housing-related environmental hazards may also exist in housing that is otherwise of good quality. Appendix A briefly describes the housing-associated health and injury hazards HUD considers key targets for intervention. Appendix B lists the references that serve as the basis for the information provided in this NOFA.

(B) Healthy Homes Activities

HUD has identified four categories for grouping Healthy Homes activities. These are: (1) Excess moisture reduction, (2) dust control, (3) ventilation and control of toxins, and (4) education. These four activities are described in this section.

(1) Excess moisture reduction:

Moisture problems are evident in many homes, more so in older urban areas and communities with humid climates. While high moisture levels alone are not sufficient to necessarily result in health hazards, it is a common precursor. Moisture problems can lead to paint deterioration (lead poisoning), mold formation (pulmonary hemosiderosis in infants), higher concentrations of dust mites, cockroach infestation, asthma and allergen sensitization, and structural hazards associated with rot and rust (injuries). In a 1995 study of pulmonary hemosiderosis in Cleveland, Ohio, toxic molds were identified in 65% of homes within the target areas, compared to a national prevalence rate of 3%. The disease in infants associated with this exposure (infant pulmonary hemorrhage) had a 30% mortality rate. Nationally, this mold-related disease appears to have a low prevalence, but, for those children who contract this disease, a very high mortality rate. There is also evidence that certain molds can be important triggers of asthma in children, a disease which has seen a 160% increase in the past fifteen years in children under five. In addition, the presence of moisture problems is a risk factor for respiratory illnesses and symptoms, especially in children.

Structural problems can allow moisture intrusion, as well as create safety and fire hazards and provide access for rodent and insect pests. Structural defects can result from improper construction, poor maintenance, or natural hazards. Holes in floors are present in more than one million U.S. homes. Open cracks or holes in walls (four million homes) and broken plaster or peeling paint (three

million homes) are even more prevalent. Moisture problems require a variety of corrective interventions, ranging from simple patching to correction of basic drainage.

(2) **Dust Control.** Dust sources, sinks and traps can serve as a vehicle for a variety of hazardous agents, such as lead, allergens, and pesticide residues. Settled and airborne dust can become problems where surface conditions hinder cleaning, such as rough or porous surfaces. Dust is the principal pathway through which children are exposed to lead-based paint and mold and is also an exposure route for allergens, dust mites, and some pesticides. In young children, transmission occurs principally through normal hand-to-mouth contact. Some dust traps are relatively easily addressed, for example, the removal of carpets and sealing of floor surfaces. Dust remediation often consists of removal by using special vacuum systems, and the creation of smooth and cleanable surfaces, as well as controlling dust sources, such as sinks (e.g., draperies), sources such as paint and exterior bare soil, and unsafe work practices (uncontrolled renovation). New household vacuums with dust sensors are now available on the retail market and warrant study regarding their effectiveness in house dust control. Another key research need involves the sink and filtering action of carpets, that is, the way in which they attract, trap and release dust and other pollutants. Low-cost dust control methods are available and may cost as little as \$250 per unit.

(3) **Ventilation and control of toxins.** Ventilation can be either a problem or an intervention. Proper ventilation supplies adequate oxygen and removes carbon dioxide and other pollutants, such as allergens. Virtually no home ventilation system actively supplies clean fresh air; instead, infiltration through building "leakage" is the norm, although tighter building envelopes and better insulation typically reduce fresh air incursion. In some climates, increasing ventilation can result in increased moisture problems. Poorly-designed systems can contribute to dispersal of mold, soil gases (such as radon) and other contaminants into the living space. Carbon monoxide exposures can occur through combustion spillage caused by airflow reversal in chimneys or use of unvented heaters or appliances. Carbon monoxide alarms and airflow analysis that could detect dangerous air movements are rare in U.S. housing. Improperly-maintained or inadequately vented heating and cooking appliances may introduce

hazardous gases and particulate matter into the living environment and are also related to fire hazards. Building materials, cleaning products, and appliances can emit gases with irritant, allergic, or other toxic properties. Ozone generators, for example, are known to increase indoor ozone with no positive impact on air quality.

(4) **Education.** Education is an important part of most of the interventions that will be implemented. Occupants can be encouraged to use checklists, such as that provided in HUD's "Danger in the Home" brochure, to identify and correct hazards, and create a safer and healthier home environment. Occupant behavior can be modified using prompting tools that can be especially effective in preventing injuries or illnesses at low cost (\$100-\$200 per unit). For example, provision of a hot water thermometer (as a "prompting device") is known to result in reductions in scald injuries, because hot water heater temperatures are lowered and residents know to keep them lowered. Education and outreach efforts also need to be targeted to multiple audiences, such as residential construction contractors, health care deliverers and housing specialists.

(C) Baseline Assessment and Initiation of Projects

Through the Healthy Homes Initiative, HUD will initiate the baseline assessment of available risk reduction techniques and research on the control of key hazards described in Appendix A, and initiate projects to promote implementation of techniques demonstrated to be successful. Grantees will perform research and demonstrate and assess interventions addressing multiple housing-related problems affecting the health of children and develop and disseminate interventions appropriate to residential environments.

The main tasks to be addressed by these projects include the following:

- (1) Identification of homes where intervention would be appropriate.
- (2) Identification and evaluation of effective methods of hazard abatement and risk reduction.

(3) Development of appropriately-scaled and efficient intervention strategies.

(4) Selection of efficient strategies for evaluating intervention effectiveness.

(5) Development of local capacity to operate sustainable programs to prevent and control toxic housing-based hazards, especially in low and very-low income residences.

HUD has decided to initiate the HHI projects primarily by issuing competitively awarded grants this fiscal

year. On February 26, 1999, HUD issued a Notice of Funds Availability targeted at mold and moisture control in inner city housing. That NOFA was published in the **Federal Register** as part of HUD's FY 1999 SuperNOFA (see 64 FR 9719-9724). The broader projects funded through this NOFA, published today, will allow HUD to assess whether and how well mold and moisture control can be integrated into other hazard control efforts. (This Notice, and the application kit, also appears on HUD's Web site, at www.hud.gov/lea.) HUD will evaluate proposals based on the elements described below. Awards are expected to be made by September, 1999.

(D) Project Elements

Project elements include:

(1) Pilot-testing and implementing housing assessment, maintenance, renovation and construction techniques to identify and correct housing-related illness and injury risk factors.

(2) Developing and delivering public education to prevent both emerging and well-recognized housing-related childhood diseases and injuries, and promote the use of identified solutions.

(3) Conducting research that evaluates the effectiveness of housing interventions and public education campaigns, and provides the knowledge base for recommending future use of the most cost-effective strategies.

(E) Goals and Objectives

The primary goal of this program is to protect children by supporting one or more demonstration projects employing cost-effective, replicable interventions to correct safety and health hazards in the home environment capable of producing serious diseases and injuries in children.

Objectives include the following:

(1) Developing a cost-effective protocol for identifying homes that are candidates for interventions, identifying hazards in these homes, and screening out homes where structural or other condition factors (e.g., cost accessibility) make interventions infeasible or impractical.

(2) Developing a flexible set of intervention strategies that take into account the range of conditions likely to be encountered in older housing, and the need to maximize the number of housing units that receive an intervention.

(3) Developing an efficient strategy for evaluating the effectiveness of interventions in preventing disease and injury in children.

(4) Building local capacity to develop a sustainable program that will continue

to prevent and, where they occur, minimize and control housing-based hazards in low- and very-low income residences when HUD funding is exhausted.

(5) Affirmatively furthering fair housing and environmental justice.

(6) Mobilizing public and private resources, involving cooperation among all levels of government, the private sector, and community-based organizations to develop the most promising, cost-effective methods for identifying and controlling housing-based hazards.

(7) Integrating safe work practices into housing maintenance, repair, and improvements.

(8) To the greatest extent feasible, promoting job training, employment, and other economic opportunities for low-income and minority residents and businesses which are owned by and/or employ low-income and minority residents as defined in 24 CFR 135.5.

(F) Eligible Activities

You will be afforded considerable latitude in designing and implementing the interventions to prevent or correct safety and health hazards in the home environment capable of producing serious diseases and injuries in children. However, in developing a strategy, you should use all reasonably available sources of information on controlling housing-based hazards in buildings and protecting workers and occupants during and after the intervention process. HUD is interested in promoting housing intervention approaches that result in the reduction of health threats for the maximum number of residents, and in particular low-income children, and that demonstrate replicable techniques which are cost-effective and efficient.

The following direct activities and support activities are eligible under this grant program.

(1) Direct Project Elements (activities conducted by you and any sub-recipients):

(a) Performing evaluations of eligible housing to determine the presence of housing-based hazards (e.g., mold growth, unvented appliances, exposed steam pipes or radiators, damaged lead-based paint) through the use of generally accepted testing procedures.

(b) Conducting medical examinations of young children for conditions caused or exacerbated by exposure to hazards where this is considered essential to your project, and there are no alternative sources to cover these costs.

(c) Conducting housing interventions to remediate existing housing-based hazards and address conditions that

could result in their recurrence. Any lead hazard evaluation and control work shall be conducted by certified performers in accordance with the *HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing* ("Guidelines") and other applicable regulations.

(d) Carrying out temporary relocation of families and individuals during the period in which intervention is conducted and until the time the affected unit receives clearance for reoccupancy. Residents so relocated should be guaranteed the choice of returning to the unit after the intervention.

(e) Performing medical testing recommended by a physician or applicable occupational or public health agency for individuals in hazardous conditions and environmental sampling to protect the health of the intervention workers, supervisors, and contractors.

(f) Undertaking housing rehabilitation activities that are specifically required to carry out effective control of housing-based hazards, and without which the intervention could not be completed and maintained. Grant funds under this program may also be used to control immediate lead-based paint hazards.

(g) Conducting clearance testing and analysis for lead, mold, carbon monoxide and/or other toxins as appropriate, with respect to generally accepted standards or criteria, or where not available, other appropriate levels justified in conjunction with the project.

(h) Carrying out architectural, engineering and work specification development and other construction management services necessary to, and in direct support of, activities to control housing-based hazards and remediate existing hazards.

(i) Providing training on safe maintenance practices to homeowners, renters, painters, remodelers, and housing maintenance staff working in low- or very-low income housing.

(j) Providing cleaning supplies for hazard intervention and hazard control to community/neighborhood-based organizations for use by homeowners and tenants in low income housing, or to such homeowners, and tenants directly.

(k) Conducting general or targeted community awareness or education programs on environmental health and safety hazards. This activity would include training on safe maintenance and renovation practices, among other topics, and further fair housing and environmental justice goals. It would also include making materials available, upon request, in alternative formats for persons with disabilities (e.g., Braille,

audio, large type), and in languages other than English that are common in the community, whenever possible.

(l) Securing liability insurance for hazard intervention and hazard evaluation and control activities to be performed.

(m) Supporting data collection, analysis, and evaluation of project activities. This activity is separate from administrative costs.

(n) Conducting applied research activities directed at demonstration of cost-effective evaluation and intervention methods for preventing housing-based hazards.

(o) Presenting research findings at a scientific conference in each project year following the first year of activity.

(p) Maintaining a registry (updated at least monthly) of housing units in which housing-based hazards were not found during evaluation, and those in which such problems and hazards have been controlled. Units on the registry should be affirmatively marketed to families with young children and such families should be given preference for occupancy when they are vacant.

(q) Preparing quarterly progress reports, interim and final research reports, and an overall final grant report detailing activities, findings, conclusions and recommendations, at the conclusion of grant activities.

(2) Support Elements.

(a) Your administrative costs.

(b) Program planning and management costs of sub-grantees and other sub-recipients.

(G) Ineligible Activities

You cannot use program funds for the following:

(1) Purchase of real property.

(2) Purchase or lease of equipment having a per unit cost in excess of \$5,000, unless prior written approval is obtained from HUD.

(3) Medical treatment costs.

IV. Program Requirements

Applicants are subject to the following requirements:

(A) Threshold Requirements—Compliance with Fair Housing and Civil Rights Laws

With the exception of Federally recognized Indian tribes, all applicants and their subrecipients must comply with all Fair Housing and civil rights laws, statutes, regulations and executive orders as enumerated in 24 CFR 5.105(a). If you are a Federally recognized Indian tribe, you must comply with the Age Discrimination Act of 1975, section 504 of the Rehabilitation Act of 1973, and the Indian Civil Rights Act.

If you, the applicant—

(1) Have been charged with a systemic violation of the Fair Housing Act by the Secretary alleging ongoing discrimination;

(2) Are a defendant in a Fair Housing Act lawsuit filed by the Department of Justice alleging an ongoing pattern or practice of discrimination; or

(3) Have received a letter of noncompliance findings under Title VI of the Civil Rights Act, section 504 of the Rehabilitation Act of 1973, or Section 109 of title I of the Housing and Community Development Act of 1974—

HUD will not rank and rate your application under this NOFA if the charge, lawsuit, or letter of findings has not been resolved to the satisfaction of the Department before the application deadline stated in the individual program NOFA. HUD's decision regarding whether a charge, lawsuit, or a letter of findings has been satisfactorily resolved will be based upon whether appropriate actions have been taken to address allegations of ongoing discrimination in the policies or practices involved in the charge, lawsuit, or letter of findings.

(B) Additional Nondiscrimination Requirements

You, the applicant, and your subrecipients, must comply with the Americans with Disabilities Act and Title IX of the Education Amendments Act of 1972.

(C) Other Requirements

(1) *Budgeting.* Administrative Costs. There is a 10% maximum for administrative costs. The application kit contains specific information on allowable administrative costs.

(2) *Period of Performance.* The period of performance cannot exceed 36 months.

(3) *Coastal Barrier Resources Act.* Pursuant to the Coastal Barrier Resources Act (16 U.S.C. 3501), funds may not be used for properties located in the Coastal Barrier Resources System.

(4) *Flood Disaster Protection Act.* Under the Flood Disaster Protection Act of 1973 (42 U.S.C. 4001–4128), funds may not be used for construction, reconstruction, repair or improvement 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:

(i) 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

(ii) 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.

(5) *National Historic Preservation Act.* The National Historic Preservation Act of 1966 (16 U.S.C. 470) (NHPA) and the regulations at 36 CFR part 800 apply to the mold intervention and related hazard control activities that are undertaken pursuant to this program. HUD and the Advisory Council for Historic Preservation have developed an optional Model Agreement for use by grantees and State Historic Preservation Officers in carrying out any lead hazard control activities under this program.

(6) *Waste Disposal.* Waste disposal will be handled according to the requirements of the Occupational Health and Safety Administration (OSHA) (e.g., 29 CFR part 1910 and/or 1926, as applicable), the Environmental Protection Agency (EPA) (e.g., 40 CFR parts 61, 260–282, 300–374, and/or 700–799, as applicable), the Department of Transportation (e.g., 49 CFR parts 171–177), and/or appropriate State or local regulatory agency(ies). Disposal of wastes from intervention activities that contain lead-based paint but are not classified as hazardous will be handled in accordance with the HUD *Guidelines*.

(7) *Worker Protection Procedures.* You must comply with the requirements of OSHA (e.g., 29 CFR part 1910 and/or 1926, as applicable), or the State or local occupational safety and health regulations, whichever are most stringent.

(8) *Written Policies and Procedures.* You must have written policies and procedures for all phases of intervention, including evaluation, development of specifications, financing, occupant relocation, independent project inspection, and clearance testing (e.g., for mold, lead, carbon monoxide or other hazards, as applicable). You and all your subcontractors, sub-recipients, and their contractors must comply with these policies and procedures.

(9) *Continued Availability of Safe Housing to Low-Income Families.* Units in which housing-based hazards have been controlled under this program shall be occupied by and/or continue to be available to low-income residents.

(10) *Affirmatively Furthering Fair Housing.* If you are a successful applicant, you will have a duty to

affirmatively further fair housing. You, the applicant, should include in your application or work plan the specific steps that you will take to:

(i) Address the elimination of impediments to fair housing that were identified in the jurisdiction's Analysis of Impediments (AI) to Fair Housing Choice;

(ii) Remedy discrimination in housing; or

(iii) Promote fair housing rights and fair housing choice.

(11) *Economic Opportunities for Low and Very Low-Income Persons (Section 3).* Recipients of assistance must comply with section 3 of the Housing and Urban Development Act of 1968, 12 U.S.C. 1701u (Economic Opportunities for Low and Very Low-Income Persons in Connection with Assisted Projects) and the HUD regulations at 24 CFR part 135, including the reporting requirements of subpart E. Section 3 requires recipients to ensure that, to the greatest extent feasible, training, employment and other economic opportunities will be directed to (1) low and very low income persons, particularly those who are recipients of government assistance for housing, and (2) business concerns which provide economic opportunities to low and very low income persons.

(12) Data collection and provision.

You must collect, maintain and provide to HUD the data necessary to document the various approaches used to evaluate and control housing-based hazards, including evaluation and control methods, building conditions, medical and familial information (with confidentiality of individually-identifiable information ensured) in order to determine the effectiveness and relative cost of these methods.

(13) *Certifications and Assurances.* Certification forms are included in the application kit. These forms include:

(i) An assurance in accordance with 24 CFR 50.3(h) that the applicant will carry out its responsibilities regarding HUD's environmental review.

(ii) A certification of compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, and the implementing regulations at 49 CFR part 24; and HUD Handbook 1378 (Tenant Assistance, Relocation and Real Property Acquisition).

(iii) An assurance that the applicant's financial management system meets the standards for fund control and accountability described in 24 CFR 85.20 and 84.21.

(iv) An assurance that any pre-intervention and clearance evaluation for lead, and lead hazard abatement will be conducted by certified performers.

(v) An assurance that project funds obtained through this NOFA will not replace existing resources dedicated to any ongoing project.

(vi) Assurance that human research subjects will be protected from research risks in conformance with the Common Rule (Federal Policy for the Protection of Human Subjects, codified by HUD at 24 CFR part 60).

(vii) Certification that the applicant will comply with the requirements of the Fair Housing Act, title VI of the Civil Rights Act of 1964, section 504 of the Rehabilitation Act of 1973, and the Age Discrimination Act of 1975, and will affirmatively further fair housing. Federally recognized Indian tribes must certify that they will comply with the requirements of the Age Discrimination Act of 1975, section 504 of the Rehabilitation Act of 1973, and the Indian Civil Rights Act.

(14) *Davis-Bacon Act.* The Davis-Bacon Act does not apply to this program. However, if program funds are used in conjunction with other Federal programs in which Davis-Bacon prevailing wage rates apply, then Davis-Bacon provisions would apply to the extent required under the other Federal programs.

V. Application Selection Process

(A) Rating and Ranking

HUD intends to fund the highest ranked application(s) within the limits of funding. Once available funds have been allocated to meet the requested or negotiated amounts of the top eligible applicant(s), HUD reserves the right, in successive order, to offer any residual amount as partial funding to the next eligible applicant provided HUD, in its sole judgment, is satisfied that the residual amount is sufficient to support a viable, though reduced effort. In the event that HUD commits an error that, when corrected, would result in the selection of an otherwise eligible applicant, HUD may select that applicant when sufficient funds become available.

(1) *Negotiation.* After HUD has rated and ranked all applications and has made selections, HUD may require that all winners participate in negotiations to determine the specific terms of the grant agreement and budget. In cases where HUD cannot successfully conclude negotiations with a selected applicant or a selected applicant fails to provide HUD with requested information, an award will not be made to that applicant. In this instance, HUD may offer an award to the next highest ranking applicant, and proceed with

negotiations with the next highest ranking applicant.

(2) *Adjustments to Funding.* HUD reserves the right to fund less than the full amount requested in your application to ensure the fair distribution of the funds and to ensure that the purposes of a specific program are met. HUD may choose not to fund any portion of your application that is not eligible for funding under statutory or regulatory requirements, or which do not meet the requirements of this NOFA or which may duplicate other funded programs or activities.

(B) Factors for Award Used to Evaluate and Rate Applications

This section provides the factors for rating and ranking your application and the maximum points for each factor. The application kit provides additional instructions for responding to these factors. The maximum number of points to be awarded is 102.

(1) *Bonus Points.* This NOFA provides for the award of up to two bonus points for eligible activities/projects that the applicant proposes to be located in high performing federally designated Empowerment Zones (EZs) or Enterprise Communities (ECs). To be eligible to receive the two bonus points, you must certify that the proposed activities/projects: (a) Will be located in a Federally designated Empowerment Zone or Enterprise Community and will serve residents of the EZ/EC; and (b) are consistent with the strategic plan of the EZ/EC. If you provide this certification and HUD determines that the area is a high performing EZ/EC, you will be awarded the two points. A listing of the high performing federally designated EZs/ECs are available from the SuperNOFA Information Center, or through the HUD web site on the Internet at <http://www.HUD.gov>, as well as in the *Federal Register*.

(2) *Court-Ordered Consideration.* For any application submitted by the City of Dallas, Texas, for funds under this NOFA for which the City of Dallas is eligible to apply, HUD will consider the extent to which the strategies or plans in the city's application or applications will be used to eradicate the vestiges of racial segregation in the Dallas Housing Authority's low income housing programs. The City of Dallas should address the effect, if any, that vestiges of racial segregation in Dallas Housing Authority's low income housing programs have on potential participants in the programs covered by this NOFA, and identify proposed actions for remedying those vestiges. HUD may add up to 2 points to the score based on this consideration. This special consideration results from an order of

the U.S. District Court for the Northern District of Texas, Dallas, Division. (This Section V(B)(2) is limited to applications submitted by the City of Dallas.)

(3) *Five Rating Factors.* The five rating factors by which your application will be evaluated are as follows:

Rating Factor 1: Capacity of the Applicant and Relevant Organizational Experience (20 Points)

This factor addresses your organizational capacity necessary to successfully implement your proposed activities in a timely manner. The rating of you or your staff includes any community-based organizations, sub-contractors, consultants, sub-recipients, and members of consortia that are firmly committed to your project. In rating this factor HUD will consider:

(1) Your recent, relevant and successful demonstrated experience in undertaking eligible program activities. You must describe the knowledge and experience of the proposed overall project director and day-to-day program manager in planning and managing large and complex interdisciplinary programs, especially those involving housing rehabilitation, public health, or environmental programs. In your narrative response for this factor, you should include information on your program staff, their experience, commitment to the program, and position titles. Resumes of up to three (3) pages each and position descriptions for up to three personnel in addition to the project director and program manager, and a clearly delineated organizational chart for your project must be included as an appendix. Copies of job announcements (including salary range) should be included for any key positions that are currently vacant. Indicate the percentage of time that key personnel will devote to your project and any salary costs to be paid by funds from this program. Include descriptions of the experience and qualifications of subcontractors and consultants.

(2) Your previous experience in reducing or eliminating housing-based hazards (if any).

(3) Whether you have sufficient personnel or will be able to quickly retain qualified experts or professionals to begin your proposed program immediately and to perform your proposed activities in a timely and effective fashion. Describe how principal components of your agency will participate in or support your project. You should thoroughly describe capacity, as demonstrated by experience in initiating and implementing related

environmental, health, or housing projects.

Rating Factor 2: Need/Extent of the Problem (15 Points)

This factor addresses the extent to which there is a need for your proposed program activities to address documented problems in your target area(s).

(1) Document a critical level of need for your proposed activities in the area where activities will be carried out. You should pay specific attention to documenting need as it applies to your target area(s), rather than the larger geographic area.

(2) Your documentation of need should summarize available data linking housing-based hazards to disease or injuries to children in your target area(s). Examples of supporting data that might be used to demonstrate need, include:

(a) Economic and demographic data relevant to your target area(s), including poverty and unemployment rates;

(b) Rates of childhood illnesses or injuries (e.g., asthma, burns) that could be caused or exacerbated by exposure to conditions in the home environment, among children residing in your target area(s), and/or rates of environmentally-related disease or adverse health effects (e.g., hypertension, elevated blood lead levels) in your target area(s);

(c) Unavailability of other Federal, State or local funding or private sector resources that could be, or is used, to address the problem.

(3) For the areas targeted for your project activities, provide data available in your jurisdiction's currently approved Consolidated Plan (including the AI), or derived from 1990 Census Data, or derived from other sources (all data should be documented) that address:

(a) The age and condition of housing;

(b) The number and percentage of very-low and low income families with incomes less than 80% of the median income, as determined by HUD, for the area, with adjustments for smaller and larger families (See application kit for additional information.);

(c) The number and proportion of children under six years old.

(d) Describe how proposed activities would help HUD achieve its goals for this program area.

(e) There must be a direct relationship between the proposed activities, community needs, and the purpose of the program.

Rating Factor 3: Soundness of Approach (45 Points)

This factor addresses the quality and cost-effectiveness of your proposed

work plan. You should present information on the proposed approach for controlling housing-based hazards. The response to this factor should include the following elements:

(1) *Intervention Strategy* (30 points). Describe the strategy you will use in planning and executing the housing-based hazard interventions. You should provide information on:

(a) *Strategy for Implementing the Demonstration Project* (10 points). Describe your overall strategy for your proposed demonstration project. The description must include a discussion of:

(i) Your overall strategy for identifying, selecting, prioritizing, and enrolling units of eligible housing in which you will undertake housing-based hazards interventions, and then targeting such units to the low-income families with young children for the long run. Describe the extent to which your proposed activities will occur in an Empowerment Zone or Enterprise Community (EZ/EC), if applicable.

(ii) The estimated total number of owner occupied and/or rental units in which you will conduct interventions.

(iii) The degree to which your work plan focuses on housing units with young children, and how you propose to make treated units available to these households for the long run. Describe your planned approach to control housing-based hazards before children are affected; and/or to control these hazards in units where children have already been treated for illnesses or injuries associated with housing-based hazards (e.g., burns, lead poisoning, asthma). Describe the process for your referral of children for medical case management if this is not ongoing.

(iv) The financing strategy, including eligibility requirements, terms, conditions, and amounts available, to be employed in conducting housing-based hazards activities. You must discuss the way funds will be administered (e.g., use of grants, deferred loans, forgivable loans, other resources, private sector financing, etc.) as well as the agency which will administer the process. Describe how your proposed project will further and support the policy priorities of the Department, including providing opportunities for self-sufficiency, particularly for persons enrolled in welfare-to-work programs; or providing educational and job training opportunities.

(b) *Outreach and Community Involvement* (5 points). You must describe:

(i) Proposed methods of community education. These should include community awareness, education,

training, and outreach programs in support of your work plan and objectives. This should include general and/or targeted efforts undertaken to assist your efforts in reducing exposure to housing-based hazards. To the extent possible, programs should be culturally sensitive, targeted, and linguistically appropriate.

(ii) Proposed involvement of neighborhood or community-based organizations in the proposed activities. These activities may include outreach, community education, marketing, inspection, and housing evaluations and interventions.

(c) *Technical Approach for Conducting Housing-Based Hazards Interventions* (15 points)

(i) Describe your process for evaluating units of eligible housing in which you will undertake housing-based hazards interventions.

(ii) Describe any specialized testing or visual inspection that you will conduct during unit inspection with reference to source(s) of the protocol(s). Describe technical qualifications and requirements for laboratories. To be eligible for points under this factor, any laboratories you use must successfully participate in the Clinical Laboratory Program, National Lead Laboratory Accreditation Program, and/or National Voluntary Laboratory Accreditation Program, or other applicable quality assurance program, which you demonstrate to be substantially equivalent.

(iii) Describe the housing-based hazards interventions you will undertake. Provide an estimate of the per unit costs (and a basis for those estimates) for the type of interventions that are planned. Provide a schedule for initiating and conducting interventions in the selected units. Discuss efforts to incorporate cost-effective control methods to address multiple environmental health and safety hazards (e.g., deteriorating lead-based paint, damaged asbestos-containing materials, lack of smoke detectors). Work must be conducted in accordance with the HUD *Guidelines* in units where lead hazards are identified.

(iv) Describe your process for the development of work specifications for selected interventions. Describe your management processes to be used to ensure the cost-effectiveness of the housing interventions. Discuss your contracting process to obtain contractors to conduct interventions in selected units.

(v) Describe your plan for the temporary relocation of occupants of units selected for intervention, and how you will determine the need for

relocation. Address the use of safe houses and other housing arrangements, storage of household goods, stipends, incentives, etc.

(vi) Describe your plan for ensuring right of return and/or first referral for occupants of units selected for intervention who have had to move for intervention to occur.

(2) *Economic Opportunity* (5 points) Describe methods that will result in economic opportunities for residents and businesses in the community where activities will be carried out. Include information on how you will provide employment, business development, and contract opportunities. Describe how you or your partners will satisfy the requirements of Section 3 of the Housing and Community Development Act of 1992 to give preference to hiring low-and very low-income persons or contracting with businesses owned by or employing low-and very-low income persons.

(3) Program Evaluation and Research (10 points).

(a) Identify and discuss the specific methods you will use to measure progress, and evaluate the effectiveness of interventions. Describe how the information will be obtained, documented, and reported.

(b) Provide a detailed description of your proposed applied research activities. Your research designs should be feasible and display thorough knowledge of relevant scientific literature. They should include an appropriate plan for managing, analyzing and archiving data. Also, quality assurance mechanisms must be well integrated into your research design to ensure the validity and quality of collected data.

(4) *Budget* (Not Scored). Your proposed budget will be evaluated for the extent to which it is reasonable, clearly justified, and consistent with the intended use of program funds. HUD is not required to approve or fund all proposed activities. You must thoroughly document and justify all budget categories and costs (Part B of Standard Form 424A) and all major tasks. Describe in detail your budgeted costs for each required program element (major task) included in your overall plan. The four required program elements are: administration; education and outreach; control of housing-based hazard (including sampling); and program evaluation and applied research.

Rating Factor 4: Leveraging Resources (10 Points)

This factor addresses your ability to secure other community resources (such

as financing, supplies or services) which can be combined with HUD's resources to achieve project purposes.

(1) In evaluating this factor, HUD will consider the extent to which you have partnered with other entities to secure additional resources to increase the effectiveness of your proposed project. Describe how other organizations will participate in or support your project. Resources may include funding or in-kind contributions (such as services or equipment) allocated to your proposed program. Resources may be provided by governmental entities, public or private organizations, or other entities willing to be your partner in this effort.

(2) Each source of contributions must be supported by a letter of commitment from the contributing entity, whether a public or private source, which must describe the contributed resources that will be used in your program. Staff in-kind contributions should be given a market-based monetary value. If you fail to provide letters of commitment with specific details including the amount of the actual contributions, you will not get rating points for this factor. Each letter of commitment, memorandum of understanding, or agreement to participate shall include the organization's name and the proposed level of commitment and responsibilities as they relate to the proposed program. The commitment must be signed by an official legally able to make commitments on behalf of the organization.

Rating Factor 5: Comprehensiveness and Coordination (10 Points)

This factor addresses the extent to which your program reflects a coordinated, community-based process of identifying needs and building a system to address the needs by using available HUD and other community resources. In evaluating this factor, HUD will consider:

(1) The degree of coordination of your proposed project with those of other groups or organizations to best support and coordinate all activities, and the specific steps you will take to share information on solutions and outcomes with others. Any written agreements or memoranda of understanding in place must be described.

(2) The extent to which you have developed linkages, or the specific steps you will take to develop linkages, to coordinate your activities so solutions are holistic and comprehensive. Linkages include those with other HUD, Federal, State or locally funded activities through meetings, information networks, planning processes, or other means.

(3) The degree of coordination with housing rehabilitation, housing and health inspection, and other related housing programs.

(a) Describe your plan for integrating and coordinating housing-based hazards interventions with other housing-related activities (e.g., rehabilitation, weatherization, removal of code violations, and other similar work).

(b) Describe your plans to consolidate housing-based hazards interventions with applicable housing codes and health regulations.

(c) Describe your plans to generate and use public subsidies or other resources (such as revolving loan funds) to finance future interventions to prevent and control housing-based hazards, particularly in low- and very-low-income housing.

(d) Detail the extent to which you will ensure that the needs of minorities and persons with disabilities will be addressed adequately during your intervention activities; and that housing in which environmental hazards have been addressed will remain available and affordable in the long run for low income, minority, large families, and for persons with disabilities.

(4) If applicable, the application should demonstrate a knowledge of the target community's Consolidated Plan and/or Analysis of Impediments to Fair Housing Choice and detail the Consolidated Plan issue areas in which your organization participates. Describe the degree to which you have become actively involved (or if not currently active, the specific steps you will take to become active) in your community's Consolidated Planning process established to identify and address a need/problem that is related in whole or part, directly, or indirectly to the activities you propose.

VI. Application Submission Requirements

(A) Applicant Information

You should submit your application in accordance with the format and instructions contained in this program section of this NOFA. The following is a checklist of required application contents:

(1) Transmittal letter that summarizes your proposed program, provides the dollar amount requested, and identifies you and your partners in the application.

(2) The name, mailing address, telephone number, and principal contact person. If you are a consortium of associates, sub-recipients, partners, major subcontractors, joint venture participants, or others contributing

resources to the project, similar information shall also be provided for each of these entities and you must specify the lead entity.

(3) Completed Forms HUD-2880, Applicant/Recipient Disclosure/Update Report; Certification Regarding Lobbying; and SF-LLL, Disclosure of Lobbying Activities, where applicable.

(4) Standard Forms SF-424, 424A, 424B, and other certifications and assurances listed in this program section. (see application kit).

(5) A narrative statement addressing the rating factors for award. The narrative statement must be numbered in accordance with each factor for award (Factor 1 through 5). The response to the rating factors must not exceed a total of 30 pages.

(6) Any attachments, appendices, references, or other relevant information may accompany the project description, but must not exceed twenty (20) pages for your entire application.

(7) A detailed budget with supporting cost justification for all budget categories of your funding request.

(8) The resumes and position descriptions of your project director and program manager and up to three additional key personnel.

VII. Corrections to Deficient Applications

After the application due date, HUD may not, consistent with its regulations in 24 CFR part 4, subpart B, consider any unsolicited information you, the applicant, may want to provide. HUD may contact you, however, to clarify an item in your application or to correct technical deficiencies. You should note, however, that HUD may not seek clarification of items or responses that improve the substantive quality of your response to any selection factors. In order not to unreasonably exclude applications from being rated and ranked, HUD may, however, contact applicants to ensure proper completion of the application and will do so on a uniform basis for all applicants.

Examples of curable (correctable) technical deficiencies include your failure to submit the proper certifications or your failure to submit an application that contains an original signature by an authorized official. In each case, HUD will notify you in writing by describing the clarification or technical deficiency. HUD will notify applicants by facsimile or by return receipt requested. You must submit clarifications or corrections of technical deficiencies in accordance with the information provided by HUD within 14 calendar days of the date of receipt of the HUD notification. If your deficiency

is not corrected within this time period, HUD will reject your application as incomplete, and it will not be considered for funding.

VIII. Findings and Certifications

Paperwork Reduction Act Statement

The information collection requirements contained in this NOFA were submitted to the Office of Management and Budget for review and approval under the provisions of the Paperwork Reduction Act of 1995 (44 U.S.C. 3501-3520). The approval number when assigned will be announced by separate notice published in the **Federal Register**. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the collection displays a valid control number.

Executive Order 12612, Federalism The General Counsel, as the Designated Official under section 6(a) of

Executive Order 12612, Federalism, has determined that the provisions of this NOFA do not have "federalism implications" within the meaning of the Order.

Accountability in the Provision of HUD Assistance

Section 102 of the Department of Housing and Urban Development Reform Act of 1989 (HUD Reform Act) and the final rule codified at 24 CFR part 4, subpart A, published on April 1, 1996 (61 FR 1448), contain a number of provisions that are designed to ensure greater accountability and integrity in the provision of certain types of assistance administered by HUD. On January 14, 1992, HUD published, at 57 FR 1942, a notice that also provides information on the implementation of section 102. The documentation, public access, and disclosure requirements of section 102 are applicable to assistance awarded under this NOFA as follows:

Documentation and public access requirements. HUD will ensure that documentation and other information regarding each application submitted pursuant to this NOFA are sufficient to indicate that basis upon which assistance was provided or denied. This material, including any letters of support, will be made available for public inspection for a five-year period beginning not less than 30 days after the award of the assistance. Material will be made available in accordance with the Freedom of Information Act (5 U.S.C. 552) and HUD's implementing regulations at 24 CFR part 15. In addition, HUD will include the recipients of assistance pursuant to this

NOFA in its **Federal Register** notice of all recipients of HUD assistance awarded on a competitive basis.

Disclosures. HUD will make available to the public for five years all applicant disclosure reports (HUD Form 2880) submitted in connection with this NOFA. Update reports (also Form 2880) will be made available along with the applicant disclosure reports, but in no case for a period of less than three years. All reports—both applicant disclosures and updates—will be made available in accordance with the Freedom of Information Act (5 U.S.C. 552) and HUD's implementing regulations at 24 CFR part 15.

Section 103 HUD Reform Act

HUD will comply with section 103 of the Department of Housing and Urban Development Reform Act of 1989 and HUD's implementing regulations in subpart B of 24 CFR part 4 with regard to the funding competition announced today. These requirements continue to apply until the announcement of the selection of successful applicants. HUD employees involved in the review of applications and in the making of funding decisions are limited by section 103 from providing advance information to any person (other than an authorized employee of HUD) concerning funding decisions, or from otherwise giving any applicant an unfair competitive advantage. Persons who apply for assistance in this competition should confine their inquiries to the subject areas permitted under section 103 and subpart B of 24 CFR part 4.

Applicants or employees who have ethics related questions should contact the HUD Office of Ethics (202) 708-3815. (This is not a toll-free number.) For HUD employees who have specific program questions, such as whether particular subject matter can be discussed with persons outside HUD, the employee should contact the appropriate Field Office Counsel.

Prohibition Against Lobbying Activities

Applicants for funding under this NOFA are subject to the provisions of section 319 of the Department of Interior and Related Agencies Appropriation Act for Fiscal Year 1991 (31 U.S.C. 1352) (the Byrd Amendment) and to the provisions of the Lobbying Disclosure Act of 1995 (Pub. L. 104-65; approved December 19, 1995).

The Byrd Amendment, which is implemented in regulations at 24 CFR part 87, prohibits applicants for Federal contracts and grants from using appropriated funds to attempt to influence Federal executive or legislative officers or employees in

connection with obtaining such assistance, or with its extension, continuation, renewal, amendment, or modification. The Byrd Amendment applies to the funds that are the subject of this NOFA. Therefore, applicants must file a certification stating that they have not made and will not make any prohibited payments and, if any payments or agreement to make payments of nonappropriated funds for these purposes have been made, a form SF-LLL disclosing such payments must be submitted. The certification and the SF-LLL are included as Attachment D of this NOFA.

The Lobbying Disclosure Act of 1995 (Pub. L. 104-65; approved December 19, 1995), which repealed section 112 of the HUD Reform Act, requires all persons and entities who lobby covered executive or legislative branch officials to register with the Secretary of the Senate and the Clerk of the House of Representatives and file reports concerning their lobbying activities.

IX. Environmental Requirements

Activities assisted under this program are subject to HUD environmental review to the extent required under 24 CFR part 50. An award under the Healthy Homes Initiative does not constitute approval of specific sites where activities may be carried out. Following award execution, HUD will perform environmental reviews for activities to be carried out on properties proposed by your organization. You may not rehabilitate, convert, repair or construct a property, or commit or expend program funds or non-HUD funds for these program activities for any eligible property, until you receive written notification from the appropriate HUD official that HUD has completed its environmental review and the property has been approved. The results of environmental reviews may require that proposed activities be modified or proposed sites rejected.

X. Authority

The authority for this program is the Departments of Veterans Affairs and Housing and Urban Development, and Independent Agencies Appropriations Act, 1999, Pub. L. 105-276 (approved October 21, 1998), 112 Stat. 2461, 2482.

Dated: July 16, 1999.

David Jacobs,

Director of the Office of Lead Hazard Control.

Appendix A

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

Allergens and asthma: Experts estimate that 14 million Americans have asthma, with

an associated annual cost of \$14 billion. Asthma is now recognized as the leading cause of school and work absence, emergency room visits and hospitalization. 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. Cockroach allergens appear to be excessive in 30–50% of inner-city housing and affect 5–15% of the population, whereas dust mite appears to be the dominant allergen in other environments. Interventions known to have beneficial effects include installation of impervious mattress and pillow covers, which can reduce allergen exposure by 90%. Other dust mite control measures include dehumidification, laundering bedding, and removal of carpets and other dust sinks. Cleaning carpets with tannic acid solution has also been demonstrated to greatly reduce dust mites. Asthma prevention program costs have been estimated at about \$500 per unit, which includes about \$150 for educational interventions.

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 (ACM) 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 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 ACM 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 be done only by a professional trained and certified to handle asbestos safely and can cost from a few hundred to a few thousand dollars; removal can be more expensive.

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 (respiratory irritants). Carbon monoxide, an odorless gas, can be fatal. Nitrogen dioxide can damage the respiratory tract, and sulfur dioxide can irritate the eyes, nose and respiratory tract. Smoke and other particulates irritate the eyes, nose and throat, and can cause lung cancer.

Improper venting and poor maintenance of heating systems and cooking appliances can dramatically increase exposure to combustion products. 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 pipe; 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.

Insect and Rodent pests: The observed association between exposure to cockroach antigen and asthma severity has already been noted above. In addition, cockroaches may act as vehicles to contaminate and 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 children. Insect and rodent infestation is frequently associated with substandard housing that makes it difficult to eliminate. Treatment of rodent and insect infestations often includes the use of toxic pesticides which may present hazards to occupants (see below). Integrated pest management (IPM) for rodents and cockroaches, which reduces the use of pesticides, is estimated to cost approximately \$150 per unit. IPM control measures include sealing holes and cracks, removing food sources and use of traps.

Lead: 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 have fallen nationally, a large reservoir of lead remains in housing. The most recent national survey, conducted from 1991–94, showed that nearly one million U.S. preschoolers still have elevated blood lead levels. Overall, the prevalence rate among all children under six

years of age is 4.4%. Among low-income children living in older housing where lead-based paint is most prevalent, the rate climbs to 16%; and for African-American children living in such housing, it reaches 21%.

HUD estimates that 64 million dwellings have some lead-based paint, and that 20 million have lead-based paint hazards. Of those, about 3.6 million have young children and of those, about 500,000 units have inadequate cash flow to respond to lead-based paint hazards. Costs can range anywhere from \$500 to \$15,000 per unit. Corrective measures include paint stabilization, enclosure and removal of certain building components coated with lead paint, and cleanup and "clearance testing", which ensures the unit is safe for young children.

Mold and moisture: An analysis of several pulmonary disease studies estimates that 25% of airways disease, and 60% 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 in cultured surface samples. Associations between exposure to SA and "sick building" symptoms in adults have also been observed. Other related toxicogenic 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. Addressing mold problems in housing requires coordination among the medical, public health, microbiological, housing, and building science communities.

The cost of mold/moisture-related intervention work (e.g., integrated pest management, clean & 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 is needed. In Cleveland, mold interventions, including repairs to ventilation systems and basement flooring, in the most heavily-contaminated homes range from \$500—\$5,000, with some costs also being dedicated to lead hazard control simultaneously through its lead+asthma program.

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 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 (termiticides), rodents (rodenticides), molds and fungi (fungicides), and microbes (disinfectants). In 1990, the American Association of Poison Control Centers reported that some 79,000 children were involved in common household pesticide poisonings or exposures. In households with children under five years old, almost one-half stored at least one pesticide product within reach of children. Exposure to chlorpyrifos (CP), a commonly used organophosphate insecticide, in the prenatal and early postnatal period may impair neurodevelopment. While CP is a biodegradable pesticide, substantial persistence of CP in house dust has been demonstrated. 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, EPA is concerned that cyclodiene might cause long-term damage to the liver and the central nervous system, as well as an increased risk of cancer.

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

Radon progeny: 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 Environmental Protection Agency (EPA) recommends that every home be measured for radon. EPA estimates that materials and labor costs for radon reduction in an existing home are \$800—\$2500. 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.

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 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.

Unintentional injuries/fire: Unintentional injury is now the leading cause of death and disability among children younger than 15 years of age. In 1997, nearly 7 million persons in the United States were disabled for at least 1 full day by unintentional injuries received at home. During the same year, 28,400 deaths were attributable to unintentional home injuries, of which 1800 occurred among children 0—4 years of age. Among young children, three types of events accounted for more than ¾ of deaths: fires/burns, drownings, and mechanical suffocation. Falls and poisoning are the next most common.

Home visitation protocols have been shown to be effective in reducing exposure to such 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, such as smoke alarms, electrical socket covers, etc.

Appendix B

References

- Institute of Medicine. Indoor Allergens, Assessing and Controlling Adverse Health Effects, National Academy Press, Washington, D.C. 1993.
- Mott L., Our Children at Risk, Natural Resources Defense Council, Washington, D.C. 1997.
- Rom W.N. Ed. Environmental and Occupational Medicine, Little, Brown and Co., Boston, 1992.
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