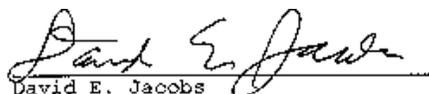


# QUARTERLY REPORT

## Grant Programs Progress Report

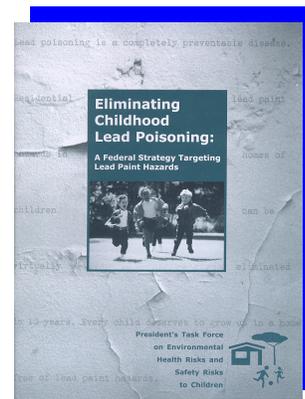
**F**or more than ten years, the *Office of Healthy Homes and Lead Hazard Control* grant programs have been a driving force in the national effort to prevent childhood lead poisoning. Together we have helped to cut the number of poisoned children in half during the past decade. But there are still far too many children exposed to lead and other hazards in their homes. We must do more and we must do it even better. In order for us to maintain our momentum and achieve our goal, we will continue to rely on our grant programs and our collaborative partnerships with grantees. We previously shared with you our plans for further

enhancing the performance of our lead hazard control grant programs throughout this and future years to protect more children more quickly. Because you are a critical partner in our success, we want to ensure that you are fully aware of the progress our grant programs have made. Therefore, we will be providing on a quarterly basis the status of our grant program activities. This information has been compiled from the Lead Hazard Control Grant Program quarterly reporting system, including past systems and the on-line reporting system. Healthy Homes grant program quarterly reports and technical studies work plan milestones will also be included in these reports. This first report includes activities that occurred through December 31, 2002.

  
 David E. Jacobs  
 Director, Office of Healthy Homes and Lead Hazard Control

## SUMMARY

**L**ead Hazard Control and Healthy Homes grantees are the foundation of the 10-year Federal Strategy to eliminate childhood lead paint poisoning by 2010, which was developed by the President's Task Force on Environmental Health and Safety Risks to Children. Before these grant programs were developed, there were no federal funds devoted to lead hazard control in where the risks are most privately owned low-income housing severe. Over the past



### Highlights

- ✓ Summary
- ✓ Background
- ✓ Program Accomplishments
- ✓ Healthy Homes Grant Program
- ✓ Healthy Homes and Lead Technical Studies
- ✓ Lead Outreach

Volume 1

April 2003

decade, grantees have successfully developed the nation's capacity to respond to the environmental health problem. Examples of the breadth of our activities and indications of our progress include:

Grant programs are now active in over 250 jurisdictions.

Grantees have been a critical part of implementing HUD's lead-based paint regulations for federally assisted housing.

Grantees have been a major part of expanding better public awareness and training a workforce to address lead-based paint hazards in our nation's housing.

The Centers for Disease Control and Prevention report that the number of lead poisoned children in 1999-2000 was reduced to 434,000, down from 890,000 during 1991-94.

HUD's national survey shows that the number of housing units with lead-based paint was reduced to 38 million in 2000, from 64 million in 1990.

The scientific evaluation of the lead hazard control grant program showed that dust lead levels (the most important exposure pathway) in units treated under the grant program declined by 50-88%. Furthermore, blood lead levels of children living in those units declined by 26% after one year.

The recognition that housing and health intersect, and that professionals from both worlds and from all levels of government, academia, community and the private sector can find new ways to work together, has helped to give the Healthy Homes concept currency and vitality. The Lead Hazard Control and Healthy Homes programs demonstrate the success and commitment our children must have.

**Lead Hazard Control Grant Program**

**BACKGROUND**

The Lead-Based Paint Hazard Control Grant Program was authorized under Title X, Section 1011 of the Housing and Community Development Act of 1992 (Public Law 102-550). This section of the Act authorized a grant program for State and local governments for the evaluation and reduction of lead-based paint hazards in privately owned housing built before 1978 and occupied by low-income families. Specifically, the origins of the grant program were included in a provision that called for:

Grants to States and units of general local government for the hazard control of significant lead-based paint and lead dust

hazards in low-income owner-occupied units and low-income privately owned rental units; States and units of general local government must demonstrate the capability to identify hazards in housing units, to oversee the safe and effective conduct of the hazard control, and to assure the future availability of abated units to low- and moderate-income persons. The grant program has grown as a result of ten rounds of funding to 245 grants totaling \$703 million to state and local governments in 37 states (including the District of Columbia). Over 65,000 housing units are to be made lead-safe with this funding. Table 1 provides a breakdown of the ten lead hazard control grant funding rounds.

**TABLE 1**

Funding Round	Grants Awarded	Grant Award Amount	Units in Grant Agreement
Round 1	10 Local Grantees 4 State Grantees 6	\$ 47,572,757.00	2,985
Round 2	19 Local Grantees 12 State Grantees 7	\$ 92,819,282.00	8,879
Round 3	35 Local Grantees 26 State Grantees 9	\$ 139,266,987.00	10,502
Round 4	20 Local Grantees 16 State Grantees 4	\$ 54,418,741.00	5,787
Round 5	25 Local Grantees 23 State Grantees 2	\$ 49,895,033.00	4,113
Round 6	21 Local Grantees 17 State Grantees 4	\$ 50,000,000.00	5,356
Round 7	22 Local Grantees 17 State Grantees 5	\$ 63,680,382.00	5,709
Round 8	25 Local Grantees 24 State Grantees 1	\$ 59,999,600.00	7,914
Round 9	23 Local Grantees 21 State Grantees 2	\$ 59,000,000.00	6,756
Round 10	45 Local Grantees 40 State Grantees 5	\$ 86,103,942.00	7,861
<b>TOTALS</b>	<b>245</b>	<b>\$ 702,756,724.00</b>	<b>65,862</b>

Although the grant program has evolved since these origins, our primary focus has always been to reduce the exposure of young children to lead-based paint hazards in their homes. To accomplish this goal, the core objectives of the Lead Hazard Control Grant Program include

Implementation of a national strategy, as defined in Title X of the Housing and Community Development Act of 1992 (42 U.S.C. 4851 *et. seq.*) (Title X), to build the community's capacity to eliminate lead-based paint hazards in housing, as widely and quickly as possible by establishing a workable framework for lead-based paint hazard identification and control; Mobilization of public and private resources, involving cooperation among all levels of government, the private sector, and grassroots faith-based and other community-based

organizations to develop cost-effective methods for identifying and controlling lead-based paint hazards; Development of comprehensive community approaches which result in integration of all community resources (governmental, grassroots faith-based and other community-based, and private businesses) to address lead hazards in housing; Integration of lead-safe work practices into housing maintenance, repair, weatherization, rehabilitation, and other programs that will continue after the grant period ends; and To the greatest extent feasible, promotion of job training, employment, and other economic opportunities for low-income and minority residents and businesses that are owned by and/or employ low-income and minority residents as defined in 24 CFR 135.5.

**Program Accomplishments**

The Lead Hazard Control Grant Program has positively impacted the lives of hundreds of thousands of young children either at risk of lead hazards or who have already been identified as having elevated blood lead levels. In addition, the program has generated significant state and local government action, much of which will endure beyond the life of the grant awards. Some of the outcomes that the Lead Hazard Control Grant Program has produced to date include:

**1) Lead-Based Paint Hazard Identification and Control**

By the end of fiscal year 2002, the Lead Hazard Control Grant Program had cumulatively made 44,244 units lead-safe for low-income families with young children at greatest risk of lead poisoning and had tested over 73,000 units for the presence of lead-based paint and lead-based paint hazards. For FY 2002 alone, the Lead Hazard Control Grant Program completed

8,040 lead-safe units (homes), 12 percent more than our projected goal. For the last two years, over 85% of the units treated under the program were pre-1960 housing units. Per-unit hazard control costs plus associated property repair have declined from an average \$9,440 per unit at the start of the program in FY 1993 to an average \$6,000 per unit in FY 2002. The data in Table 2 represents cumulative accomplishments over the life of the multi-year grants

The data do not include the substantial number of housing units made lead-safe as a result of public outreach/education programs; leveraging of other funds; federal, state and local enforcement; technical studies; and other HUD rehabilitation housing assistance covered by the HUD Lead Safe Housing Rule for assisted housing. Unit counts are derived from grant agreements, grantee quarterly and final reports, and monitoring

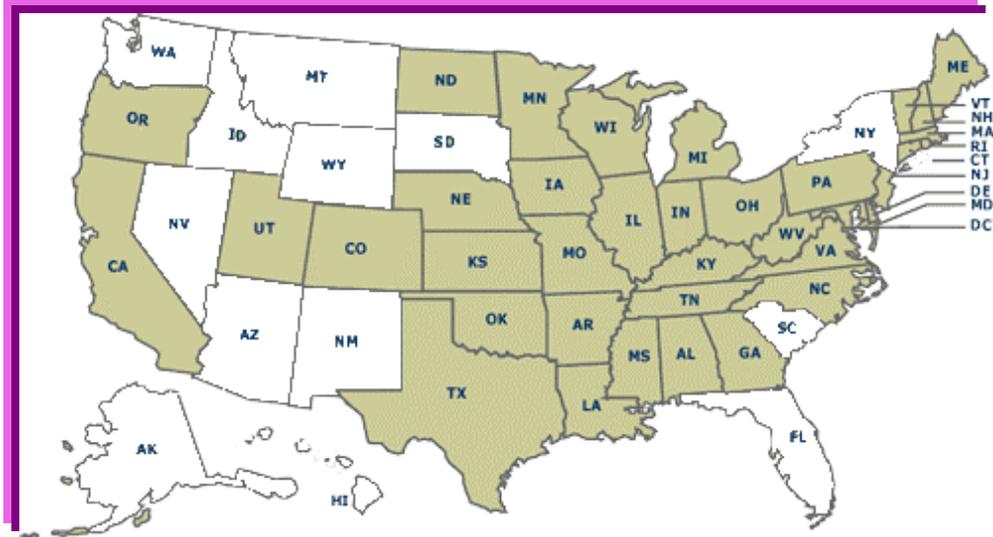
**Table 2**

	FY1994	FY1995	FY1996	FY1997	FY1998	FY1999	FY 2000	FY 2001	FY 2002
<b>Units made lead-safe (cumulative)</b>	161	406	2,700	7,025	12,552	20,023	27,992	36,204	44,244
<b>Units tested (cumulative)</b>	318	792	5,864	15,591	24,171	35,943	50,870	63,327	73,458

**2) National/Local Capacity Building**

- Contractor Certification Legislation: At latest count, 39 States and 3 Tribes have authorized operational lead-based paint contractor certification programs (see shaded areas on the map). In order for a state to apply under the program, a state applicant must have enacted a state lead-based paint contractor certification program

or have declared its intentions to do so (through gubernatorial and legislative letters of intent). In 1991, at the inception of the grant program, very few states had such statutes and only one State (Massachusetts) possessed an operational lead-based paint contractor certification program. The Lead Hazard Control Grant Program has proven to be a significant incentive for states to assume leadership roles in addressing this issue.



# QUARTERLY REPORT

- Availability of Contractors: The Lead Hazard Control Grant Program has stimulated the creation of a large cadre of competent contractors and trained workers. Currently, over 24,500 persons are certified to conduct lead hazard control activities (i.e., inspection, risk assessment, abatement (supervisor and worker), and project design) nationwide. In addition, HUD and its training partners alone have trained over 44,000 persons in lead-safe work practices. Many jurisdictions now have access to a certified contractor pool and a competitive marketplace; especially where state certification programs and resources to address lead-based paint hazards have been in place for some time. It is apparent that a substantial body of qualified professionals is being created through the stimulus of the Lead Hazard Control Grant Program and other housing rehabilitation programs. Over the long run, this can only lead to more competitive pricing and reduced hazard reduction costs. It is providing the public with both access and
- Local Capacity Building: The Lead Hazard Control Grant Program has also created in-house expertise in over 250 jurisdictions across the country. With this increased knowledge and expertise, many jurisdictions have revised their housing code and occupancy standards to incorporate standards of care for lead-based paint and have established standards for lead safety in housing. This, in turn, encourages owners (through incentives or mandates) to bring their housing up to these standards. Prior to this program, little or no "hands-on" capacity existed in these jurisdictions regarding strategies and methods needed to treat private housing safely and effectively.

The data in Table 3 represents cumulative accomplishments related to training efforts over the last two years conducted by Lead Hazard Control grantees.

**Table 3**

Skills Training Conducted	Number of Individuals Trained
Low-Income Individuals	2,973
Property Owners / Tenants / Remodelers / Renovators / Maintenance Workers	6,416
Lead-Based Paint Contractors	3,089
Grant Program & Partnering Entities Staff	1,842
Lead-Safe Work Practices	5,296

Specific examples of the training efforts identified in Table 3 include:

- Essential maintenance practices training for childcare providers, property owners, and renovation contractors;
- Lead Smart Renovator training classes and Sampling Technician classes;
- "Homeowners Workshops" where homeowners are instructed how to maintain their properties to reduce lead risks after the lead hazard reduction process;
- Training and employment opportunities in lead hazard control to low-income, disadvantaged youth enrolled in Youthbuild Programs;
- Training programs which allows local rehabilitation contractors to be trained as licensed supervisors;
- Promoting and/or conducting training to increase the number of lead certified contractors statewide; and
- Providing skill trainings for low-income individuals, property owners, tenants, remodelers, renovators, maintenance workers, and lead-based paint contractors.

**3) Mobilization of Public and Private Resources to Identify and Control Lead-Based Paint Hazards**

- Matching Contribution: The statute authorizing the Lead Hazard Control Grant Program required that each recipient of a grant under Section 1011 shall make a matching contribution toward the cost of activities in an amount not less than 10 percent of the total grant amount. The ability of the Lead Hazard Control grantees to leverage State, local, and private funds to supplement their grant activities is evidenced by the fact that over \$174,808,732 has been leveraged by grantees whose program period of performance has ended. This amount does not include current active grantees. These leveraged funds have been used to further program activities.
- Improved Cost-Effective Methods/Results: The Lead Hazard Control Grant Program has provided both the number and diversity of housing interventions needed for rigorous evaluations of the cost-effectiveness of various hazard reduction methods. A longitudinal evaluation conducted to determine the effectiveness of Lead Hazard Control Grant Program interventions showed that children who live in units where hazards have been eliminated have a 26% lower blood lead level and their homes have a sustained 50-88% decline in dust lead levels. As a result of Lead Hazard Control Grant Program interventions and innovations, new low-cost methods are now available to identify and fix hazardous housing.

#### 4) Development of Comprehensive Community Approaches

Collaborative Partnerships: The Lead Hazard Control Grant Program has stimulated the effective collaboration of local health, housing, and community development agencies as well as local faith-based and community-based organizations and groups of parents of lead poisoned children. Lead hazard control grantees are working with over 200 community-based organizations to support grant program activities such as education and outreach, intake and enrollment, and inspection and lead hazard control. The grant program requires that a close working relationship be established between local public health and housing agencies. This is having a major impact not only in the states and communities receiving funds but in other places as well. In the past, the only point of contact between the two types of agencies (health and housing) was often in cases where a child with an elevated blood lead level was identified; this cooperation is now expanding to focus upon prevention as well as evidenced by collaboration with Centers for Disease Control and Prevention grantees that administer lead poisoning prevention programs. Both health and housing agencies are now seeking funding from our lead hazard control grantees to address lead-based

paint hazards when rehabilitation of a structure is taking place. This preventive approach results in lead hazard control interventions before children are poisoned.

Public Education/Outreach: Public education/outreach is becoming increasingly connected to action. Lead Hazard Control grantees have combined education and outreach efforts with follow-up action to treat the housing environments identified as the source of exposure. Thus, public education coupled with physical intervention is no longer limited to children with an elevated blood lead levels. Much is now being done on a preventive basis, rather than after the fact. As awareness of this public health hazard grows, so too grows the conviction that public education/outreach is one of the most valuable tools to be applied to this problem.

The data in Table 4 represents cumulative accomplishments related to education and outreach activities over the last two years conducted by Lead Hazard Control grantees. Specific examples of these efforts have been identified

**QUARTERLY REPORT**

**Table 4**

Target Audiences	Activities Conducted	Number of Individuals Reached
<b>Health &amp; Child Care Providers</b>	<ul style="list-style-type: none"> <li>○ Information on reducing exposure to lead hazards sent to local community health clinics for dissemination to parents.</li> <li>○ Contacted county hospital family practice practitioners and pediatricians practicing at county hospitals to disseminate outreach materials and to generate interest in program.</li> </ul>	99,386
<b>Schools, Parent Groups, Places of Worship</b>	<ul style="list-style-type: none"> <li>○ Outreach at elementary schools and daycares - emphasis has been on start of school meetings with staff and the 'back to school' fair involving parents and students.</li> <li>○ Recruitment and training of parents to become parent educators.</li> </ul>	182,200
<b>Landlords / Landlord Groups, Tenants / Tenant Groups, Housing Corporations , CBOs</b>	<ul style="list-style-type: none"> <li>○ Conduct public informational meetings to describe program and enlist participants for lead testing, including for Section 8 landlords.</li> <li>○ Recruitment and demonstration of outreach tools to non-profit CBOs to conduct outreach and make presentations to rental property owners.</li> <li>○ Provide information on grant program to property owners via water bill inserts.</li> <li>○ Conduct door to door outreach efforts to landlords and tenants in the target area.</li> <li>○ Distribute educational and informational materials at Health Fairs that target a specific high-risk population.</li> <li>○ Advertisement of lead awareness, education and grant program activities on public access / cable television .</li> <li>○ Advertisement of grant program on municipal vehicles and public transportation.</li> <li>○ Development of task force comprised of residents, private owners, landlords and others to address lead issues in their community.</li> <li>○ Initiate a Lead Poisoning Prevention Week, targeting property owners, tenants, parents, banks, realtors, gardeners, "do-it-yourselfers", and the media.</li> </ul>	500,753
<b>Community or Target Area Wide</b>		
<b>Contractors</b>	<ul style="list-style-type: none"> <li>○ Recruitment and training of local renovation/remodeling contractors.</li> <li>○ Conduct orientation and technical training sessions to contractors to become certified lead abatement workers.</li> </ul>	

**5) Economic Opportunities for Low-Income and Minority Residents**

Economic Opportunities: The Lead Hazard Control Grant Program is creating economic opportunities for

low-income residents of target areas all over the country. Over the last two years alone, nearly 3,000 low-income

# QUARTERLY REPORT

individuals have received skills training and nearly 1,000 have subsequently been employed as a result of Lead Hazard grantee training efforts. In addition, data from Lead Hazard Control grantees whose period of performance has ended have reported that, for efforts related to economic opportunities for low- and very low-income persons (Section 3), the number of Section 3 residents that were employed and trained in connection with their programs totaled 934. The total number of Section 3 businesses receiving awards for construction and non-construction work totaled 120. Neighborhood organizations are often becoming subcontractors to the grantees, especially in terms of community education and outreach activities. Thus,

a major secondary benefit of the grant program is the retention of Federal resources within the affected neighborhoods.

The Lead Hazard Control Grant Program continues to enjoy significant Departmental and Congressional support, although budget pressures are extraordinary. How well lead hazard control grantees use these funds in a timely manner will determine future support. We must redouble our efforts to improve efforts to treat units and protect children from the dangers of lead hazards.

A detailed lead hazard control grantee status report for the reporting period October - December 2002 is provided in *Attachment A*.

## Healthy Homes Grant Program

Congress established the Healthy Homes Initiative in 1999 to “develop and implement a program of research and demonstration projects that would address multiple housing-related problems affecting the health of children.” Under the initiative, the OHHLHC awards grants to public and private organizations and works with other Federal partners to perform technical studies and demonstration projects that reduce housing-related health and safety hazards that pose risks to residents, particularly children in low-income families. HUD works closely with its Healthy Homes grantees as well as Federal partners to implement the Healthy Homes Initiative that include:

- The Centers for Disease Control and Prevention (CDC);
- The U. S. Department of Agriculture's (USDA's) Cooperative State, Research, Education, and Extension Service (CSREES);
- USDA's Forest Products Laboratory (FPL) in Madison, Wisconsin;
- The National Institute of Science and Technology, and
- The National Institute of Environmental Health Sciences.

Healthy Homes grant activities include identifying ways to prevent or reduce the severity of childhood health problems related to substandard housing conditions, such as asthma, lead poisoning, and unintentional injuries. Core activities and outcomes of the healthy homes demonstration grantees includes:

- Development of assessment tools and interventions (mitigation methods) to repair housing-related hazards;
- Training to build capacity for “high performance” (energy efficient, durable, sustainable, and healthy and safe for occupants) housing construction/rehabilitation;

- Development of good practice guidance and protocols for assessments and interventions.
- Demonstration of new technologies, and
- Public education on healthy homes issues;

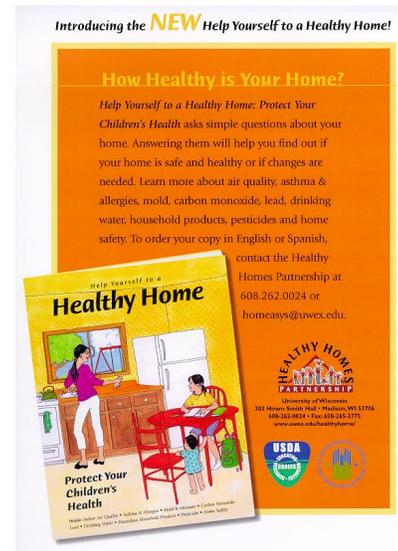
## Program Accomplishments

Four rounds of Healthy Homes grants have been awarded since 1999. In these rounds, \$31.5 million has been awarded to 41 grantees in 20 states, positively impacting the lives of tens of thousands of young children.

Healthy Homes’ grantees have developed methods for assessing housing-related health and safety hazards and work specifications for mitigating these hazards. In addition, through the grant projects analytical and software methodologies to detect and monitor the transport of housing-related hazards have been developed.

Grantees have trained staff and residents to assess housing-related hazards and share this information through home visitation, health fairs and community education programs. Bilingual brochures, booklets and healthy homes websites have been prepared. Information about the Healthy Homes grant program and results generated by grantees are available to the public on the OHHLHC website, [www.hud.gov/offices/lead/hhi/index.cfm](http://www.hud.gov/offices/lead/hhi/index.cfm).

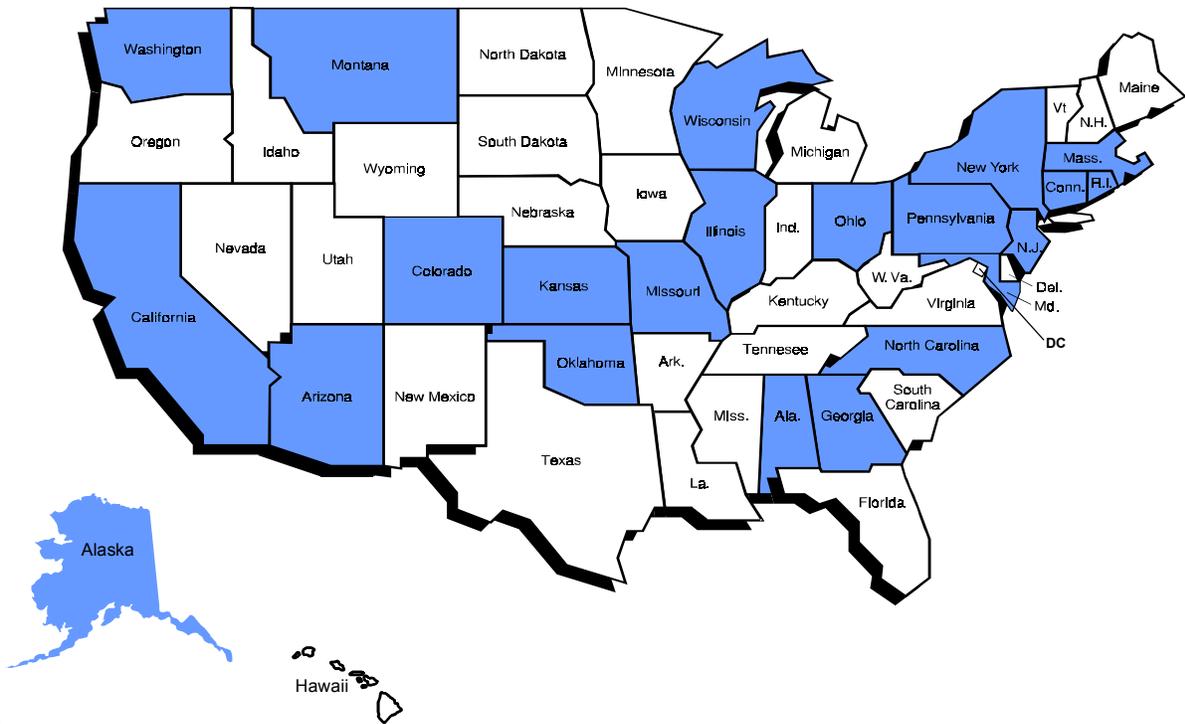
Healthy Homes demonstration projects address program objectives, such as developing protocols (e.g., visual



assessment, cleaning, interventions), method development, educational materials for children and adults, websites, and capacity building (e.g. training community health workers, interns, residents, and grantee staff to carry out healthy homes assessments and interventions). The following paragraphs provide a few examples of grantee and interagency projects that have generated outputs relative to program objectives specified in the Healthy Homes Demonstration Notice of Funding Availability..

- Identification of target areas and homes where interventions will occur: Duke University is using Geographic Information Systems (GIS) to characterize environmental hazards (allergens and asthma triggers, lead, pests, mold and moisture, asbestos, radon, fire and combustion products) down to the individual house level. The study will characterize housing stock according to risk and allow communities to allocate resources most effectively toward minimizing aggregate risks and develop programs to prevent housing-related health effects before they occur.

### Geographic Distribution of Healthy Homes Initiative Grantees



November 3, 1999

Air Quality Sciences collected air and dust samples from 50 residences (with no evidence of moisture intrusion) in Atlanta in order to determine baselines for the type and quantity of mold in homes in this region. This baseline provides realistic reference data to more effectively evaluate microbial growth and conditions in urban homes that have a suspected mold problem.

- Identification and evaluation of effective methods of hazard abatement and risk reduction: Environmental Health Watch modified the lead hazard control cleaning protocol to develop a protocol for cleaning cockroach allergen. Because cockroach allergen is an asthma trigger, and because the allergen persists long after the cockroaches have been eliminated, effective cleaning is essential to reducing asthmatic episodes of residents.
- Development of appropriately scaled, flexible, cost-effective and efficient intervention strategies that take into account the range of conditions likely to be encountered in older housing, and that maximize the number of housing units that receive an intervention: City of Providence provided Healthy Homes interventions, including Carbon Monoxide detectors, in units that were receiving lead hazard control treatment. This project has shown that Healthy Homes interventions can be effectively integrated into Lead Hazard Control activities. In the winter of 2002/2003 detectors alarmed in three units, possibly saving the lives of the residents.
- Development of methodologies for evaluating intervention effectiveness: Columbia University is analyzing house dust and blood samples for extracellular polysaccharides (EPS) of four mold species to develop a method that offers a predictor of human exposure by

correlating EPS levels of molds in dust with antibodies in blood. The measurement of EPS offers the potential of providing a marker more specific than measuring colony forming units (CFUs), but more general than the highly specific protein allergen determinations.

- Development of local capacity in target areas and target groups to operate sustainable programs to prevent and control housing-based hazards, especially in low and very-low income residences: USDA's Forest Products Laboratory is establishing a coalition of associations, home builders and government agencies with the purpose of creating a network to coordinate and disseminate research results to builders, remodelers, trade contractors, nonprofit housing developers, community organizations and consumers. This coalition, the Residential Moisture Management Network, is working to promote the construction and rehabilitation of healthy and affordable housing and to provide an awareness of the intersection of housing and health to individuals and organizations involved in construction activities. HUD collaborated with the Department of Energy (DOE) to develop a pilot training program, Healthy and Affordable Housing: Practical Recommendations for Building, Renovating, and Maintaining Housing, and to deliver this course to five sites in New England. This training provided an awareness of Healthy Homes issues applicable to new construction or renovation. This training, jointly sponsored by HUD, the Asthma Regional Coordinating Council of New England, DOE, is tailored for building professionals, property owners and homeowners.

CDC is developing a National Healthy Homes Training Center and an environmental risk manual. This organization is finalizing a draft of an updated version of the 1976 Basic Housing Inspection Manual. The revised Basic Housing Inspection Manual will bridge the knowledge gap between building code and health professionals to reflect new technologies and new code requirements. The Manual will provide guidance structural aspects of construction activities to both health and code enforcement staff as well as provide guidance on the assessment and control of health hazards such as lead-based paint, home safety hazards and pest and rodent infestation.

Grantees train individuals to present Healthy Homes issues on either an individual basis to families or in group settings. Child Abuse Prevention Council is training AmeriCorps workers to provide community outreach on asthma, lead poisoning, second smoke and home environmental hazards through home visitation and family resource centers. This grantee has trained more than 538 individuals in healthy homes issues that include asthma, lead poisoning, second hand smoke and the Home Environment.

The University of Alabama at Birmingham is improving unhealthy housing conditions in communities of great need through the training and placement of community residents. This project developed training materials, Healthy Homes 101, and, to date, has trained 10 Healthy Homes Environmentalists (interns). The program will be delivered to a total of 15 interns by the end of the grant period. Interns developed presentation materials for the Healthy Homes Road Show. These interns will conduct healthy homes assessments and educational interventions in 115 homes. The grantee will work with Jefferson County to

develop and implement work specifications for Healthy Homes remediations. This program

In October 2002, NIST presented the Mold and Moisture Workshop that was attended by more than 40 building scientists and technical professionals to assess the state of knowledge and identify key research issues associated with mold in housing.

- Development of 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) make interventions infeasible or impractical: The National Institute of Standards and Technology is improving existing technologies for monitoring and detecting the transport of moisture and other contaminants through a building envelope. These products provide information about early detection of contaminants to minimize structural damage and prevent adverse health effects:
  - A MOIST software product that models the 2-dimensional transport of moisture in a building;
  - A CONTAM software product that models the transport of contaminants throughout a residence; and
  - A prototype moisture sensor to be inserted into building components.

Cuyahoga County Health Department developed and implemented a visual assessment protocol for mold and moisture control. This protocol has been applied by other grantees to assess the effects of moisture intrusion and mold in residences. CDC used this protocol for investigation of mold in Native American homes.

# QUARTERLY REPORT

- Harvard School of Public Health developed a survey that empowers public housing residents to evaluate and control potential sources housing-related hazards in their own home. Public housing residents were successfully trained to administer the survey to other residents to assess the respiratory health of residents and identify potential environmental sources for exposure (e.g. cockroach allergen).
- Boston Public Health Commission introduced building/inspection standards to the Inspectional Services Department of the City of Boston through a series of trainings. This grantee integrated resident education about asthma triggers, including pest, with information about Integrated Pest Management interventions. Through this project 182 baseline home inspections were completed and 103 Integrated Pest Management (IPM) visits to 61 locations were carried out.
- Erie County Health Department is developing a program that involves education to residents and managers of housing projects to clear a unit prior to occupancy of low-income families, particularly young families with small children. This project is succeeding in ensuring that children do not move into a home that represents an imminent health hazard and is followed by a comprehensive home visit after families move into an approved unit. Erie County has assessed 161 units and cleared 123 units for occupancy.
- Radiation Monitoring Devices is developing an instrument that offers rapid and accurate on-site testing of a building for mold. The instrument uses monoclonal and polyclonal antibody methods to detect, identify (to the species level) and quantify four different fungal species.
- Development and delivery of public outreach programs that provide information about effective methods for preventing housing-related childhood diseases and injuries and for promoting the use of those interventions: A major objective of HUD's Healthy Homes grant program is to educate the public about identifying and controlling housing-related health and safety hazards. As a part of this education/training effort, OHHLHC participates in conferences, workshops and develops training programs. In addition, the Healthy Homes Program facilitates teleconferences for grantees and contractors about Healthy Homes issues. Teleconferences on mold/moisture control and heating ventilation and air conditioning have been held. Planned teleconferences include mold and moisture control, environmental assessment and data collection, education, outreach and training, and effective healthy homes interventions (e.g., IPM).

Through the well-established infrastructure of this program, the HUD/USDA CSREES partnership has reached over 26,000 consumers in 42 states and trained 321 trainers in Healthy Homes awareness issues.
- Targeting, through education and outreach, specific high-risk communities and other identified audiences such as homeowners, landlords, health care deliverers, pregnant women, children, residential construction contractors, maintenance personnel, housing inspectors, real estate professionals, home buyers, and low-income minority families: Esperanza Community Housing Corporation has reached over 1500 low-income residents through their program that utilizes specially trained "Promotoras" who initiate a community door-to-door campaign to

# QUARTERLY REPORT

reduce health and safety hazards associated with housing in target areas. This grantee also provides transportation for blood lead testing of residents.

- Implementation of media strategies to use print, radio and television to increase public awareness of housing-related hazards that pose risks to children: USDA's CSREES developed a revised version the popular booklet, "Help Yourself to a Healthy Home" in English and Spanish. HUD will be printing its own edition of this document in both languages for distribution at meetings and conferences.

Erie County Health Department developed and distributed coloring books to educate children about healthy homes hazards and preventive measures for reducing these hazards.

- Dissemination of existing tools and, as needed, new tools to inform parents and caregivers about housing-related hazards that and enable them to take prompt corrective action: The Children's Health Environmental Coalition developed and launched a website, [www.checnet.org](http://www.checnet.org) to inform parents and about preventable health and developmental problems caused by exposure to hazards. More than 60,000 individuals have gone to this website to access information about housing-related hazards.

The University of Wisconsin School of Pharmacy is using home visitation to the families of Head Start children (poverty-level families) to reduce environmental risk factors for asthma, injury, and lead. These home visits, by trained members of Head Start (HS) families, as well as by professionals, will employ an extensive environmental survey involving home inspection for allergen exposure, injury hazards, and lead exposure; risk stratification; and

individualized and targeted home interventions. Interventions will be provided two groups, the "Facilitation Group" and the "Installation Group." The Facilitation Group will have allergen- and injury-prevention devices (e.g., mattress and pillow covers, smoke alarms, cabinet latches, etc) made available at no cost. The Installation Group will have these devices installed by the trained HS parents or the Project Home staff. A total of 179 homes have received interventions.

Harvard School of Public Health developed educational materials on asthma in both English and Spanish for distribution by community health workers (CHWs) for to public housing residents. The CHWs participated in creating the package, including the creation of graphics for the cover.

A detailed healthy homes grantee status report for the reporting period October - December 2002 is provided in **Attachment B**.

## Healthy homes and Lead Technical Studies

**T**he Lead Technical Studies grants are authorized under sections 1011(g)(1), 1051 and 1052 of Title X. Under these sections, HUD conducts technical studies on specific topics related to the evaluation and subsequent mitigation of residential lead hazards. The lead technical studies program also responds to recommendations by the Task Force on Lead-Based Paint Hazard Reduction and Financing, which was established pursuant to section 1015 of Title X. The Task Force presented its final report to HUD and the EPA in July 1995. The Task Force Report, entitled "Putting the Pieces Together: Controlling Lead Hazards in the Nation's Housing," recommended that research be conducted on a number of key topics to address significant gaps in our knowledge of lead exposure and hazard control.

The findings of technical studies have been used to develop guidance for the Lead Hazard Control Grant Program, to provide the basis for technical elements of the Lead Safe Housing Rule (24 CFR 35, subpart B-R), and for writing and updating HUD's *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing* ("the HUD *Guidelines*"), published in June 1995 and revised in September 1997. The *Guidelines* include state-of-the-art procedures for all aspects of lead-based paint hazard evaluation and control. The *Guidelines* reflect the Title X framework for lead hazard control, which distinguishes two types of control measures: interim controls and abatement of lead-based paint hazards. Interim controls are designed to address hazards quickly, inexpensively, and temporarily, while abatement is intended to produce a permanent solution. While the studies performed to date indicate that the *Guidelines'* recommended procedures are effective in identifying and controlling lead hazards while protecting the health of abatement workers and occupants, the Office recognizes that further, targeted technical studies and field experience can result in further improvements to the *Guidelines*. As a result, the Office is now

developing a comprehensive revision to the *Guidelines*, reflecting the results of its technical studies.

Another portion of the Lead Technical Studies program is the design, implementation and evaluation of outreach activities related to lead safety issues. As part of its lead hazard reduction program, the Office has conducted outreach and public education initiatives as an element of the Lead Hazard Control Grant program, through interagency agreements, such as with EPA and CDC for the National Lead Information Clearinghouse, and through specific lead outreach grants.

Lead hazard control grantees conduct outreach activities to increase the ability of the program to deliver lead hazard control services, including educating owners of rental properties, tenants, and others on the Residential Lead-Based Paint Hazard Reduction Act and related subjects. Similarly, HUD provides funding to the National Lead Information Clearinghouse for disseminating current information on the assessment and reduction of lead-based paint hazards, adverse health effects, sources of exposure, detection and risk assessment methods, environmental hazards abatement, and clean-up standards.

The lead outreach grants are designed to:

- Increase enrollment of low-income housing units for treatment via the HUD lead hazard control grant program or another lead hazard treatment program.
- Develop and distribute outreach and educational materials in order to raise public awareness of childhood lead poisoning, its prevention and proper lead hazard identification and control methods among at-risk communities and at-risk populations of children and workers in the

housing maintenance or  
rehabilitation fields.

- Encourage occupants to identify potential lead-based paint hazards and report them to property owners and managers, and public health and/or housing officials as appropriate.

### **Program Accomplishments**

The Office has awarded 22 lead technical studies grants since 1993.

Core activities of the technical studies grantees relate to the following topics:

- Research on Lead Measurement and Sampling Methods
- Research on Lead Hazard Assessment Methods
- Lead Hazard Control Research
- Research on Longer-Term Effectiveness of Lead Hazard Control Interventions
- Lead Outreach

A detailed lead technical studies grantee status report for active grants in the reporting period October - December 2002 is provided in *Attachment C*. A description of significant project accomplishments for grants (excluding the most-recently awarded grants, which have just started work) follows:

#### ***1) Research on Lead Measurement and Sampling Methods:***

- Spot-Test Kit Performance Evaluation. Major objectives include: Develop a standard protocol for evaluating the performance of commercially available spot test kits (6 selected) in the laboratory (e.g., ASTM procedure); develop a standard method for the manufacture of test paint films (e.g., pigment type, substrate) and manufacture films; assess the relative importance of various factors on kit performance (e.g., substrate type,

pigment type); assess kit performance on field samples; develop standard document for reporting the results of kit evaluation protocol.

A joint effort between QuanTech and the National Institute of Science and Technology.

- Analysis of Dust Wipes Using Portable XRF Analyzers.

The objective is to develop a standard methodology to assess the performance of portable XRF analyzers in measuring lead in dust wipes.

***University of Cincinnati Dept. of Environmental Health.***

- Sampling Lead Dust in Carpets and Upholstery.

The objective is to compare the performance of 5 different methods of sampling dust-lead from carpets and upholstery in homes of lead-poisoned children. Methods include technician hand wash, vacuum, wipe, adhesive label, and a “membrane” sampler. Emphasis will be on reproducibility of the methods.

***University of Medicine and Dentistry of New Jersey.***

- Enhancing the Sensitivity and Precision of Dust-Wipe Lead Samples by Increasing the Area of Sample Collection.

A laboratory phase assessed the performance of thick and thin (individually packaged) wipe materials. Physical integrity and lead recovery was examined over various sample areas and dust/lead mass loadings, using two different sample preparation procedures. The field phase assessed the performance of dust wipe sampling for different surface areas on smooth and carpeted floors.

***University of Cincinnati Dept. of Environmental Health.***

- Use of Portable Lead Analyzers to Reduce Clearance Dust Wipe Failure Rates.

The feasibility of using field portable lead analysis methods (X-ray fluorescence analyzer, portable anodic stripping voltammetric analyzer) to screen clearance dust wipe samples was assessed in the field, with the goal being to reduce the rate of clearance failures.

*University of Cincinnati Dept. of Environmental Health.*

- Developing a Method to Measure Residential Soil-Lead Using a Portable XRF Analyzer.

Existing methods and protocols (e.g., EPA Method 6200, EPA Soil Screening Guidance) were adapted to develop a method for analyzing residential soil for lead using a portable X-ray Fluorescence (XRF) Analyzer. A draft protocol was employed by trained employees of state or local lead hazard control programs, the results of which were used to develop a final protocol.

*Research Triangle Institute.*

2) *Research on Lead Hazard Assessment Methods:*

- Risk Assessment Method Validation Field Study. A 3-site field study to assess the predictive power of the HUD/EPA risk assessment and screening protocols (i.e., with respect to dust-lead and children's blood lead levels). Data to be collected from single and multifamily housing were used to assess contribution from friction and impact surfaces to dust-lead and reliability of the paint-lead classification system.

National Center for Healthy Housing (NCHH).

- Risk Assessment Method Validation Using Existing Data Sets. Data collected from two epidemiological studies of childhood lead exposure were analyzed to assess the predictive

power of the HUD/EPA risk assessment protocol. Findings were used to suggest improvements to the existing protocol.

*Children's Hospital Medical Center; Cincinnati.*

- Lead Hazard Assessment of Carpets. Examined transfer of particles from carpet to hands (conditioned and field samples), distribution of dust and lead within in carpet pile, and potential exposure to particulate in "particle cloud" created when walking on carpet. Assessed these factors using different carpet types and different sampling protocols.

Research Triangle Institute.

- Lead Hazard Assessment of Residential Air Duct Emissions. Laboratory phase measured lead particle emissions from a simulated household ventilation duct system under varying conditions (air velocity, humidity, etc.). Field phase examined the release of lead particulate from a sample of residential systems, both before and after they are commercially cleaned.

*Research Triangle Institute.*

- Tracing Dust Lead to Residential Friction Surfaces. Dust samples were analyzed by several different methods to estimate the contribution of lead-based paint dust from friction surfaces to the lead content of dust from residential surfaces. Techniques employed include computer controlled scanning electron microscopy, detailed image analysis light microscopy, and isotopic composition analysis. Seasonal differences in the potential contribution of leaded particulate were assessed.

*The Research Foundation of SUNY/Health Science Center of Syracuse.*

- Tracing Dust-Lead to Sources Using Lead Isotopic Composition Analysis. A

relatively fast and inexpensive method of lead isotopic composition analysis (inductively coupled plasma mass spectrometry) was used to identify sources of lead in house dust. Dust will be collected from the homes of children with elevated blood lead levels. Analysis of the children's blood, food, and feces, allows identification of the major source of lead exposure to the child and an estimate of the contribution of bone-lead stores to blood-lead.

*The University of California, Santa Cruz.*

- Lead Release From Demolition of pre-1950 Inner-City Housing. Researchers measured the release of lead into the surrounding neighborhood (sampling both airborne and settled dust) during the demolition of pre-1950 Baltimore row houses. Dust was collected from entryway mats to measure the rate of outdoor dust-lead tracked into homes. Soil-lead samples were also collected from vacant lots in the inner-city neighborhoods where the demolition is being carried out.

*Kennedy Krieger Research Institute.*

3) **Lead Hazard Control Research:**

- Effectiveness of Alternative Dust-Lead Cleaning Strategies. This study will be conducted in 150 homes of lead-poisoned children (blood lead level over 20 ug/dL) in urban areas of northern New Jersey. Major objectives include comparing the efficacy of non-phosphate cleaner vs. trisodium phosphate (TSP) in cleaning floors and sills in homes of lead-poisoned children; comparing the efficacy of household vacuums vs. HEPA vacuums on the same surfaces; comparing the efficacy of household vs. HEPA vacuums in cleaning lead dust from carpets, rugs, and upholstery in homes of lead-poisoned children; and determining the degree of recontamination of new rugs and upholstery covers in a subset of homes (only longitudinal component).

*University of Medicine and Dentistry of New Jersey.*

- Efficacy of Household Vacuums and a Non-Phosphate Detergent in Reducing Lead Loadings on Non-Carpeted Floors. Major objectives include the following conducting laboratory testing of household vacuums to select 3 moderately priced vacuums (shop, canister, upright) for use in the field component of the study (based on particle collection and retention efficiencies); identifying parameters that are predictive of vacuum performance; comparing the efficacy of the vacuums (including HEPA) in cleaning dust-lead from the floors of study homes as measured by dust-wipes before and after a wet wash using a non-phosphate detergent; collecting personal air and "toddler breathing zone" samples in a subset of units during floor cleaning.

*California Department of Health Services/Public Health Institute.*

- Factors Affecting the Retention of Leaded Dust in Carpets. The research identified major factors (e.g., pile height, fiber density, fiber coating) which affect the extent to which carpets can be cleaned of leaded dust in the laboratory. The study assessed the effectiveness of a variety of HEPA and non-HEPA vacuums, as well as commercial carpet cleaning methods.

*St. Louis University School of Public Health.*

- Penetration of Particulate Through Vacuum Bags. The research involved developing a method for laboratory testing of commonly available vacuum cleaner bags to determine their efficiency in trapping fine particulates. Testing included bags advertised as having regular, "microfiltration" and HEPA capabilities.

*University of Cincinnati Department of Environmental Health.*

- Deposition of Airborne Particulate Following Dust-generating Activities. Researchers examined the rate of leaded particulate deposition in a test room following activities which generate significant quantities of leaded dust. The settling time for dust generated in various maintenance and abatement activities was determined. This research was used in assessing potential changes to the current HUD Guidelines recommendation to initiate final cleaning activities at least one hour following completion of lead hazard control activities.

*University of Cincinnati Department of Environmental Health and Georgia Tech.*

- Sealing Efficacy of Enclosures. The potential for the migration of leaded dust through joints associated with enclosures was assessed in the lab using model systems exposed to pressure pulses. Results of this research were used help to address the question of how tightly it is necessary to seal enclosures used to cover surfaces with deteriorated lead-based paint.

*University of Cincinnati.*

- Evaluation of the Effectiveness of Maryland law Requiring Lead Hazard Control Treatments of Rental Property. Maryland law requires periodic lead hazard control treatments in all pre-1950 rental housing within the state. This study evaluated the effectiveness of the required treatments in reducing dust-lead loadings to safe levels. Surveys and interviews of key stakeholders were also conducted to determine attitudes and knowledge of the law.

*Kennedy Krieger Research Institute.*

- Cleaning Lead-Contaminated Dust From Hard Surfaces. The purpose of this research is to determine the effectiveness of various detergents in cleaning lead-contaminated dust from

hard surfaces under varying conditions of wear and dust loading. The effectiveness of both high and low phosphate detergents was specifically examined. Surfaces to be examined include vinyl, wood and dry-wall.

*St. Louis University School of Public Health.*

- Monitoring HEPA Vacuum Dust Pick-up With an Aerosol Photometer. The objective of this research was to develop a dynamic reading instrument that will indicate when a surface is sufficiently “clean” and thus reduce the rate of post-intervention clearance failures. Vacuum dust pick-up was monitored using a compact aerosol photometer installed in the hose between the nozzle and collection bag in various models of HEPA vacuums. The method was developed in the laboratory with subsequent field-testing.

*University of Cincinnati Department of Environmental Health.*

- Ergonomic Risk Factors for Lead Hazard Control Workers. Ergonomic risk factors in the lead hazard control industry were identified through field observations and worker interviews. This was followed by laboratory investigations to examine the effects of individual factors (e.g., surface frictional properties, task type, lighting conditions) on worker safety. The ultimate goal was to develop appropriate work practices and ergonomics “training” to supplement current training materials for lead workers.

*University of Cincinnati Department of Environmental Health.*

- Reducing Hazards of Lead-Contaminated Urban Soils. The effectiveness of low cost methods to reduce the hazard posed by lead-contaminated yard soils was assessed in an urban, low income neighborhood. Control methods focused on application of soil contact barriers, including bark

mulch, crushed stone, and improved grass and plant cover. Research emphasis was on methods to improve grass growth and the uptake of lead in plants that can “hyperaccumulate” lead from soil. Children were videotaped during exterior play to document soil exposure patterns. The recipient also assessed different protocols for sampling soil to determine initial soil-lead levels.

*Children’s Memorial Hospital, Chicago.*

- Reducing Lead Levels in Urban Sidewalk Dust. The recipient, in partnership with the University of Cincinnati, assessed ways to reduce levels of lead in dust on inner-city sidewalks. Methods examined included a combination of treatments to stabilize deteriorated lead-based paint on building exteriors, combined with regular sidewalk and street cleaning. Research was also conducted on the reaccumulation of lead in previously abated soils and on the use phosphates as a soil amendment to reduce lead bioavailability (measured using an in vitro assay).

*City of Cincinnati.*

- Accumulation Rate of Exterior Leaded Dust and Reducing Lead Bioavailability in Soils. The recipient will determine how quickly lead in exterior dust accumulates in mats placed at the entryways of urban row houses. They will also try to identify what environmental factors contribute to high levels of lead in exterior dust. Another study component involves mixing organic compost (biosolids) into lead-contaminated soils (i.e., urban yards, community gardens, and vacant lots) to reduce the hazard posed by these soils. Kennedy Krieger Research Institute.

4) *Research on Longer-Term Effectiveness of Lead Hazard Control Interventions:*

- Evaluation of HUD Lead Hazard Control Grant Program. This research assessed the efficacy of various interim control and abatement techniques (based on blood lead and dust-lead levels) as employed by 14 state and local grantees expected to enroll about 2,900 units. All units were followed to 12 months post-intervention with a subset (about 750) followed through 36 months.

*National Center for Healthy Housing, University of Cincinnati.*

- Extension to the Baltimore Repair and Maintenance Study. This research support the extension to this study for an additional 36 months. The purpose of the study was to compare the effectiveness of three levels of interim control interventions (capped at \$1,650, \$3,500, and \$7,000 for levels I, II, and III, respectively) applied to structurally sound inner-city Baltimore row houses. Study units were followed up with at a frequency of six months with composite vacuum dust sampling (composited by floor and surface type), testing of children’s blood-lead, and collection of questionnaire data.

*Kennedy Krieger Research Institute.*

- Reaccumulation of Dust-Lead Following Cleaning (TLC study homes). Follow-up dust-wipe sampling was conducted in urban (Baltimore) homes recruited into the “Treatment of Lead-poisoned Children” (TLC) study to determine the rate of reaccumulation of dust-lead following professional cleaning interventions by themselves or in combination with minor repairs (e.g., paint stabilization). Wipe samples was collected from wall surfaces in homes that are recruited into the TLC study during the period of follow-up testing. Kennedy Krieger Research Institute.

- Evaluation of Treatments Required by Maryland Lead-Based Paint Risk Reduction Law. This project evaluated

the effectiveness of the risk reduction measures prescribed in Section 6-815 of Maryland environmental law (House Bill 760), in bringing the levels of lead dust on floors, window sills, and window troughs down to acceptable levels. Work in houses was funded by HUD round III grant to Baltimore City. ***National Center for Healthy Housing/ Baltimore City Health Department.***

### Outreach

- Implementing the Recommendations of the Title X Task Force. This grant was for the development and implementation of Strategies for Distressed Housing as recommended by the Task Force established by Section 1015 of Title X to make recommendations on expanding resources and efforts to evaluate and reduce lead-based paint hazards in private housing. This public-private task force made its recommendations in 1995; this grant was awarded as part of HUD's effort to implement strategies for the Task Force's recommendations. ***Alliance to End Childhood Lead Poisoning.***
- Support for Outreach by Grassroots Organizations. This grant supports a grant competition for small grassroots non-profit organizations and parents groups to conduct locally-based outreach programs. This hierarchical

effort reduced the paperwork for the grassroots organizations, and provided them with training by the grantee in implementing outreach activities.

***Tides Foundation.***

- Outreach and Education Services to Parents Groups, Schools and Non-Profits. This grant was for outreach and education services primarily within Michigan, with some activities on the national level. The main activity under the grant is the development and coordination of presentations to parents' groups, schools, non-profit organizations, and others. A set of accomplishments by parents' groups was developed, and posted on the Office's web site, to help serve as a model for other parents' groups. ***United Parents Against Lead of Michigan.***
- Community Health Environmental Resource Center. The goal of this grant is to identify hazards in about 1800 housing units throughout the nation, through a series of sub-grants to locally-based non-profits. Personnel of sub-grantees have been trained to identify lead and other environmental hazards in housing. ***Alliance to End Childhood Lead Poisoning.***