

City of Phoenix and Phoenix Children's Hospital



Healthy Homes Demonstration
Project

Problems Identified

- Homes of children are often unsafe
- Homes of asthmatic children are contributing to their asthma
- Parents
 - May not know about these problems with their homes
 - Don't know how to reduce these hazards
 - Can't afford to remedy these problems

Background

- **Common Thread: Interest in children's environmental health issues**
 - City's Lead Hazard Control Program staff involved in various coalitions
 - Worked with PCH and National Center prior
 - Overriding philosophy: Pursue service that was in the best interest of child clients

Gap in services available = Grant Writing

Mission

Healthy Homes Project

- Provide services to low-income families in privately owned and rental housing:
 - Asthma Triggers
 - Injury Prevention
 - Lead Poisoning Prevention
 - Housing Rehabilitation Services

Project Overview

- **Baseline: Brief questionnaire and visual assessment of the home, including**
 - 29 potential injury hazards
 - 7 potential respiratory health hazards
- **Intervention: education, device disbursement and housing structure**
- **3-4 months post-intervention: visual assessment and brief questionnaire**

Funding:

- HUD Healthy Homes Grant awarded to City - \$950 K
 - Phoenix Children's Hospital – Sub grantee contract \$650K
- Match dollars committed \$591 K
 - HOME, CDBG, Weatherization, LHCP, HP Bond

Partners:

- Phoenix Children's Hospital (PCH)
- City of Phoenix Neighborhood Services Department (NSD)
- National Center for Healthy Housing

The Organization

City of Phoenix – Neighborhood Services
Department, Housing Rehabilitation Section

- Major and Minor Housing Rehabilitation Programs
- Rental Rehabilitation Loan Program
- Home Maintenance Training Program
- Lead Hazard Control Program
- Healthy Homes Demonstration Program
- Targeted, neighborhood-based, service areas

The Organization

Phoenix Children's Hospital (PCH) Community Outreach Programs

- Healthy Homes Demonstration Project
- Breathmobile Program- mobile asthma clinic that screens, provides treatment and education on asthma for low income children in 21 inner-city schools



PCH

- treats asthmatic children in the ED and pulmonary and primary care clinics.
- treats children with unintentional injuries that have occurred in the home and provides parent education through injury prevention center outreach programs for the metropolitan community.

The Organization

PCH Injury Prevention and Research Center

- Home Safety
- Helmet/Bike Safety
- Water Safety
- Baby seats



National Center for Healthy Housing

Mission:

- *To create healthy and safe homes for children through practical and proven steps.*
- To decrease children's exposure to other hazards in the home including biological, physical, and chemical contaminants in and around the home.



Project Goals

- **Enroll 150 units**
- **Complete interventions on 120 units**
- **Hold 8 community education events**
- **Evaluate cost and effectiveness of interventions**

Develop a Recruitment/Referral Plan

- **Two-way Street: Enrollment door and referral for services**
 - Phoenix Children's Hospital Breathmobile
 - Phoenix Children's Hospital General Pediatric and Pulmonary clinic
 - Housing Rehabilitation Programs
 - Lead Hazard Control Program
 - Phoenix Head start Program

Enrollment

- At least one child < 18 , often asthmatic
- Household income $\leq 80\%$ the area median
- Enrolled from October 2003 to November 2005.

Referral Partnerships

Phoenix Children's Hospital Services

- Social work
- Healthy Steps Program
- Health Library
- Biobehavioral

Referral Partnerships

- Labor's Community Service Agency
- City of Phoenix Public Housing
- John F. Long Family Services
- Family Advocacy Center

Project Development

- Project Start –up
 - Eligibility – COP
 - Assessment – PCH
 - Case Management – Team
 - Interventions – Team
 - Post Evaluation - PCH

Project Development

- **First Tasks:**
 - Demographic tool
 - Housing assessment tool
 - Data Summary report
 - Case management spreadsheets
 - Data entry

Tool Development

- Decision to rate each room for hazards
- Development of a summary data form for home
- Developed rating system
 - L = No interventions/concerns
 - M= Medium level interventions/concerns
 - H= High level of interventions/concerns

Team Case Management

- Weekly case review with all Team members
 - Review Baseline Data Summary Sheet
 - Team prioritizes intervention strategy
 - Team members assigned tasks to complete strategy
 - Referrals made to appropriate sources?

Types of Hazards Assessed

- Injury
 - Structural injury (e.g., leaky roof, electric problems, non-functional AC)
 - Non-structural injury (e.g., no fire alarm, unsecured window blind cords)
- Respiratory health (e.g. mold or musty smell, cockroach infestation)

Structural Hazard



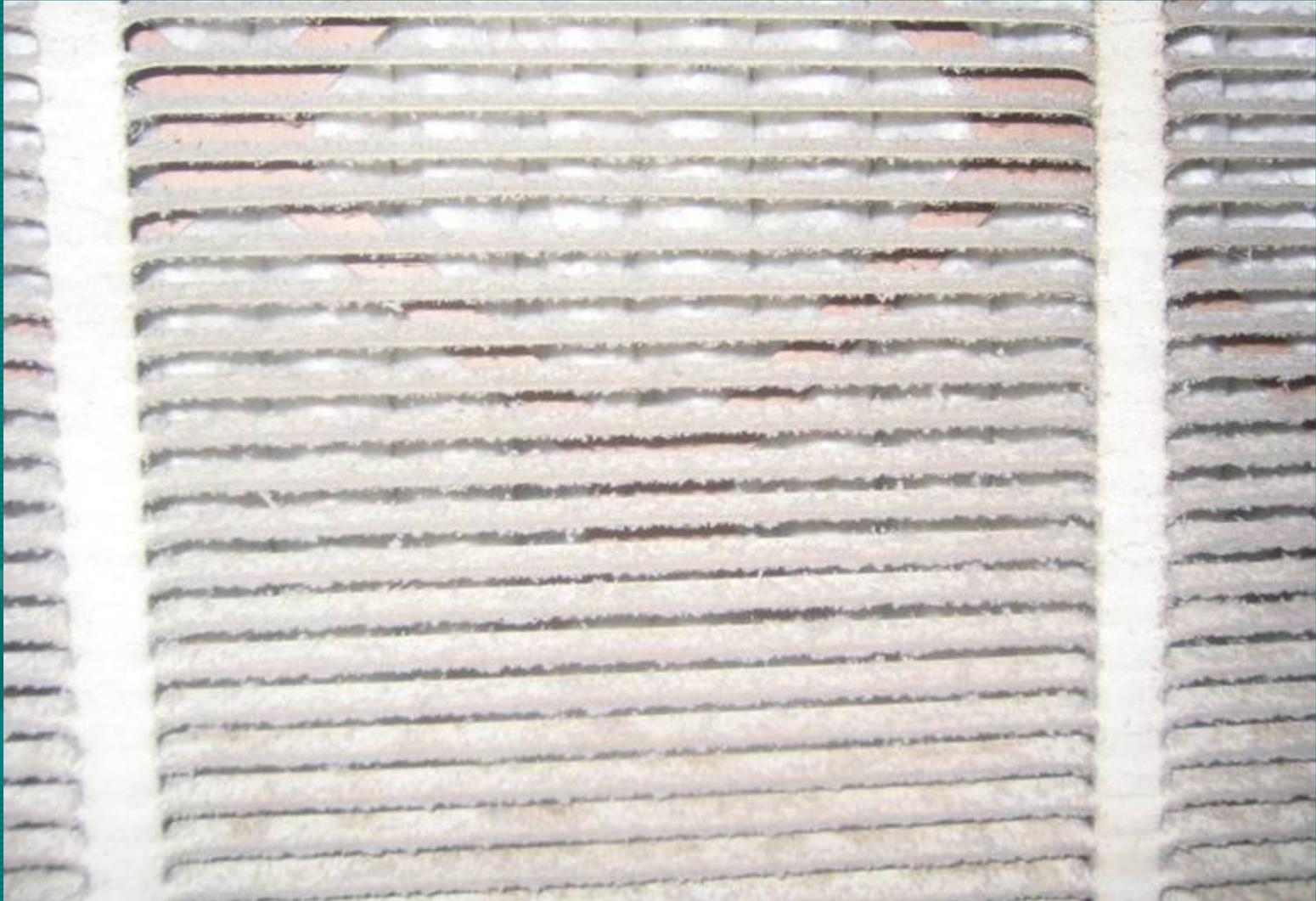
Multiple Hazards



Lead Hazards



Asthma Triggers



Asthma Triggers



Asthma Triggers



Interventions

- Goal: Provide parents with the knowledge, skills, motivation, supplies, equipment, and minimum housing quality conditions necessary to maintain a healthy and safe home.
- Three components:
 - Education
 - respiratory health and injury prevention device disbursement
 - housing (structural repair and maintenance)

Education Intervention Overview

- in-home family needs assessments to establish learning needs, barriers, motivators, and mutual learning goals.
- emphasized importance of attitudes and expectations and modeled behavior in inducing behavioral change
- caretakers were asked to perform the mitigation behavior while the health educator gave feedback and encouragement.

Education Intervention

- improving egress by removing obstacles;
- developing a fire escape plan;
- protecting against drowning hazards;
- securing window blind cords;
- safely storing sharps, medicines, weapons, and household chemicals;

Education Intervention

- strategies for asthma trigger mitigation such as control of dust, mold and other allergens or irritants;
- promoting smoking cessation;
- ensuring proper use of smoke detectors and carbon monoxide alarms; and
- changing air handler filters.

Device Disbursement Intervention

- mattress and pillow dust mite covers, vacuum cleaners with HEPA filters, washable curtains
- first aid kits, lists of emergency numbers, storage containers; space heaters, lock boxes (for medication) or gun locks
- carbon monoxide alarms and smoke detectors, batteries, outlet covers, and non-skid materials for rugs.

Device Disbursement Intervention

- baits for pest control and professional pest control company provision.
- Education and demonstration always accompanied device disbursement.

Housing Intervention (structural repair and maintenance)

- carpet removal and replacement with new hard, cleanable flooring;
- repair of deteriorated floors, stairs, and railings;
- correction of egress deficiencies by creating or modifying building openings;
- correction of roof, window, and plumbing problems resulting in safety hazards or mold growth;

Housing Intervention

- installation of window or ceiling exhaust fans;
- GFCI (ground-fault circuit interrupter) installation;
- provision of heating and/or cooling equipment; and
- provision of pool, spa or pond fences.

Before



After



Before



After



Before



After



Before



After



Before



After



Before



After



Before



After



Before



Before



After



Post Intervention

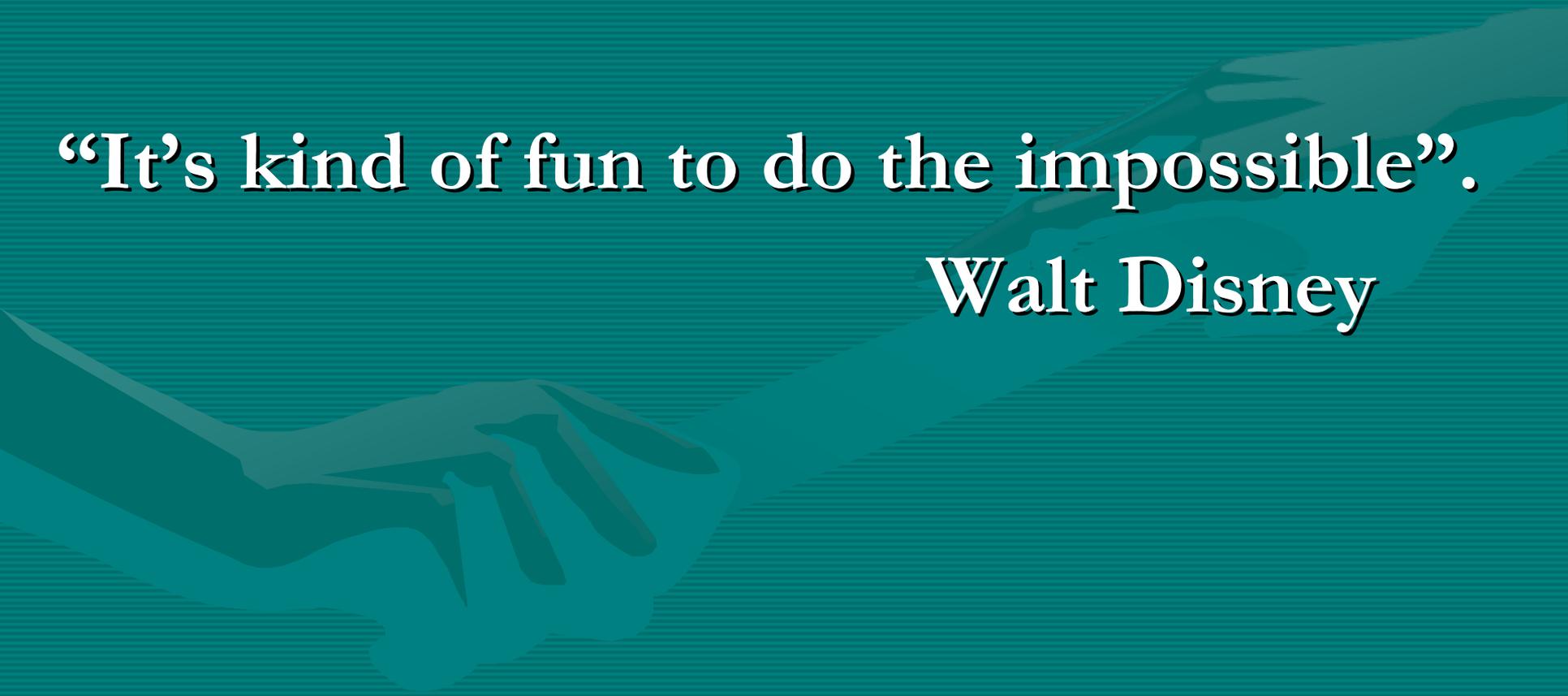
- Three month follow-up and post assessment
 - Reviewing home condition to assess family's ability to maintain changes
- Parent's reports of changes in home safety and health of asthmatic children
- Certificate of Completion

Challenges

- Housing Conditions
- Complex Family Challenges
- Mobility
- Proposition 200 (fear, limited options)
- Contractor pool
- Difficulty juggling all the pieces
- Difficult landlords
- Beginning Head-Start enrollment

Rewards

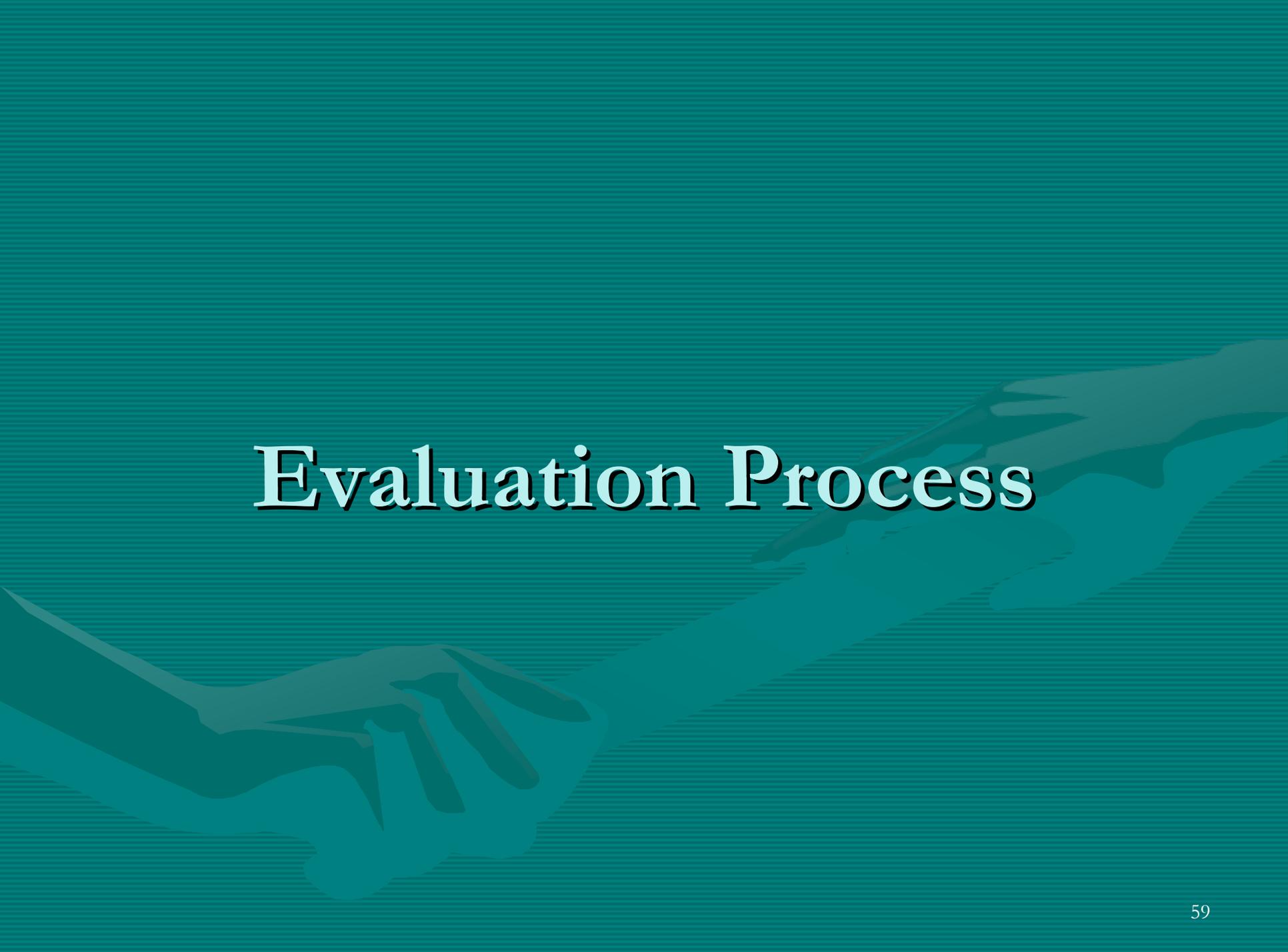
- Positive impact to children
- Positive impact to parents/guardians
- Successful Team building and spirit
- Lasting and strong partnerships
- Applied comprehensive services
- Applied health/housing strategies



“It’s kind of fun to do the impossible”.

Walt Disney

Evaluation Process

The background is a solid teal color. A large, semi-transparent silhouette of two hands shaking is positioned diagonally across the lower half of the slide, from the bottom left towards the top right. The text 'Evaluation Process' is centered in the upper half of the slide.

Purpose

- The purpose of the evaluation is to measure outcomes related to:
 - Type of interventions and their costs
 - Asthma health status (pre and post)
 - Reductions of home health and safety hazards
 - Parents perceptions of health and safety improvements

Tool Implementation

- Rating Reliability
 - Ten pilot homes assessed to evaluate consistency of tool rating system
 - Two team members completed the data summary form independently
 - Tool was enhanced
 - 95% reliability achieved

Asthma Measures

- Baseline and follow-up Asthma data collected
 - Spirometry
 - Diagnosis of asthma severity
 - Missed school days
 - ER visits
 - Hospitalizations

Why no asthma outcome analysis?

- After 1-year of PCH Breathmobile services, Harris et al. (2002) reported:
 - 95% reduction in hospitalizations
 - 84% reduction in ED visits; and
 - 54% reduction in missed school days

Why no asthma outcome analysis?

- Although 29 asthmatic children in this study had baseline and post-intervention asthma symptom data from the Breathmobile, these results were not presented in this paper because:
 - the timing of the follow-up visit was highly variable, ranging from 1 month to 6 months post-intervention;

Why no asthma outcome analysis?

- the asthma of most of the children was already treated and under control before the baseline visit; and
- the interventions took at average of 31 weeks to complete, so the line between “pre” and “post” intervention was unclear.

Data Entry

- National Center for Healthy Housing created Access database
- Trained data entry staff on the data entry system and data management
- Developed data dictionary
- Cross check data quality

Challenges

- Data entry staff/training
- Families moving
- Reassessing new home
 - Followed families, not the house
- Time frame for construction influenced actual finish of intervention

Key desired outcomes

- Positive changes in parental behavior on elimination of potential household hazards
- Improved living environments (homes with reduced potential hazards)
- Explore pre- to post-intervention change and determine if these changes are statistically significant
- Improved health status among children with asthma
- Community education/awareness

- “Everything that can be counted does not necessarily count; everything that counts cannot necessarily be counted”.

Albert Einstein









Data Analysis



Homes and Children Enrolled

- Overall: Interventions were conducted in 120 homes
- Analysis: 67 homes/households with 184 children
 - 63 children with asthma (referred to Breathmobile if not already patients)
 - 45 had asthma diagnosis before project
 - 18 asthma identified as part of the screening for this study.

Intervention Costs

- Intervention costs including education, supplies and housing repairs (but not staff time), ranged from \$38 to \$35,352 with a median of \$1,139 and average of \$5,440.
- Neither staff costs nor a breakdown of the costs of the different intervention components are available, but the homes with the highest costs had structural injury hazard repairs.
- Education ranged from 2 to 6 hours per household depending on the hazards observed.

STRUCTURAL INJURY	Hazard at V1	Hazard (V2/V1)	Improved
Hot water heater not properly ventilated or with hazardous material around it	18%	0/11	100%*
Plumbing (non-functional taps or toilet)	37%	1/25	96%*
Electrical (frayed, exposed or severed wires)	25%	0/17	100%*
Windows (broken glass or egress impaired)	22%	0/15	100%*
Electrical outlets/electrical cords (uncovered outlets or non GFCI outlets in kitchen/bathroom)	61%	2/41	95%*
Roof, ceiling, wall or floor damage	27%	0/18	100%*
Air conditioners/heating units non-functional or with dirty vents and filter	66%	6/48	88%*
Pool/spa/pond not enclosed by 4-sided fence (if child < 8 years and have pool/spa)	10%	0/7	100%*

*** The % of homes with a hazard decreased and > 50% of the homes with a hazard at baseline improved significantly.**

NON-STRUCTURAL INJURY (High Prevalent)	Hazard at V1	Hazard (V2/V1)	Improved
Fire escape route not planned or egress deficiencies present	99%	2/66	97%*
No emergency telephone numbers	97%	0/65	100%*
No first aid kit	93%	0/62	100%*
No functional smoke alarm	90%	1/60	98%*
Sharp objects improperly stored (if child<8 yrs)	84%	44/50	12%
Vitamins, meds, household products improperly stored (if child<8 yrs)	82%	4/52	92%*
CO detector non-functional (if any combustion appliances)	57%	2/38	95%*

*** The % of homes with a hazard decreased and > 50% of the homes with a hazard at baseline improved significantly.**

NON-STRUCTURAL INJURY (Medium Prevalent)	Hazard at V1	Hazard (V2/V1)	Improved
Matches and lighters improperly stored (<9 yrs)	54%	20/33	39%
Bathroom door/toilet lid not secured (<3 yrs)	46%	10/26	62%
Appliances / electrical devices in reach of children, dangling cords, multiple extension cords	22%	2/15	87%*
Window blind cords not secured (<3 yrs)	22%	0/15	100%*
Improper bucket storage (accessible or not empty) (<3 yrs)	13%	2/7	71%
Pots, dishes, and folk medicines contain lead	13%	0/9	100%*
Furniture not sturdy/secure (<3 yrs)	12%	1/6	83%

*** The % of homes with a hazard decreased and > 50% of the homes with a hazard at baseline improved significantly.**

NON-STRUCTURAL INJURY (Low Prevalent)	Hazard at V1	Hazard (V2/V1)	Improved
Unsafe small objects (<3 yrs)	10%	0/6	100%*
Rugs and runners not secured (if rugs)	10%	0/7	100%*
Mobile baby walkers present (if baby)	9%	0/2	100%
No window guards installed (if elevated windows and <8 yrs)	7%	2/5	60%
Plants (in reach of children or poisonous) (<3 yrs)	3%	0/2	100%
Unsafe cribs	3%	0/2	100%
Water temperature above 130°F (if hot water heater)	1%	0/1	100%

* The % of homes with a hazard decreased and > 50% of the homes with a hazard at baseline improved significantly.

RESPIRATORY HEALTH	Hazard at V1	Hazard (V2 / V1)	Improved
Pets in bedroom of children with asthma	9%	3/6	50%
Tobacco smoke	30%	14/20	30%
Observed dust in carpets and bedding in bedroom of child with asthma	69%	1/45	98%*
Observed dust in the heating and cooling system in bedroom of child with asthma	60%	9/39	77%*
Poor general housekeeping	52%	7/35	80%*
Mold or musty smell due to lack of exhaust fans	57%	1/38	97%*
Observed cockroach infestation	57%	5/38	87%*

*** The % of homes with a hazard decreased and > 50% of the homes with a hazard at baseline improved significantly.**

Number of Hazards

Hazards	#Possible Hazards	Average Number (range)	
		Baseline	Post-Intervention
All	36	14 (6-25)	3.4 (0-10)
Injury	29	11 (5-21)	2.5 (0-8)
Structural	8	2.7 (0-21)	0.4 (0-3)
Non-Structural	21	8.3 (3-15)	2.2 (0-7)
Respiratory Health	7	3.3 (0-7)	0.9 (0-5)

Parent's Reports

- 97% reported that their homes were safer than before the project.
- 96% reported that the health of the child with asthma was better than before the project (82% “much better” and 16% “better”)

Limitations

- Short post-intervention follow-up (3-4 months)
- Lacking health outcomes (asthma and injuries)
- Lack of blinding and control group

Summary

- Project reduced number of injury and respiratory hazards by 75%
- Parents believed homes were safer and asthmatic children were healthier

Real World Advice

- Base new programs on identified community needs and engage experts;
- The needs and capacity drive the ability of the team to innovate;
- Build a functional team by frequent communication and maintaining focus;
- Don't panic when the original strategies don't work

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BUILDING A FRAMEWORK FOR HEALTHY HOUSING

2008 National Healthy Homes Conference

Cooperative Efforts In Creating Healthy Housing

Frederick J. Morrissey, MPA

Westchester County Department of Health

**Healthy Neighborhoods, Lead Poisoning
Prevention and Tobacco Control Programs**



40°57'09.44" N 73°52'58.50" W

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YONKERS

HEALTHY HOUSING FUNDAMENTALS

- **Partnerships**
 - **Outreach**
 - **Education**
 - **Engineering**
 - **Enforcement**
-

PARTNERSHIPS

- **Westchester County**
 - **City of Yonkers**
 - **Hospitals**
 - **Community Based Organizations**
-

Westchester County Government Partnerships

- **Healthy Neighborhoods Program**
 - **Childhood Lead Poisoning
Prevention Program**
 - **Lead Safe Westchester Program**
 - **Lead Primary Prevention Program**
-

Healthy Neighborhoods Program

- **20+ Years Experience In Community Relations**
 - **Home Safety Inspection**
 - **Health Education**
 - **History of Successful Collaboration with Tenants, Landlords, and CBO's**
-

Collaboration

Westchester County Dep't. of Health

- **Community Health Services:**
 - **New mothers & newborns are referred to the Healthy Neighborhoods Program for a free home safety inspection**
 - **Asthma patients homes are visited and receive environmental interventions**

Childhood Lead Poisoning Prevention Program

- **Experienced, EPA Certified Lead Based Paint Risk Assessment Staff**
 - **Environmental Inspection**
 - **Intervention Strategies**
 - **Education / Code Enforcement**
 - **Interim Controls / Abatement**
-

Childhood Lead-Poisoning Prevention Program



Lead Safe Westchester Program

- Source for Lead Hazard Remediation Funding / HUD**
 - Partner in Community Outreach to Tenants and Landlords**
 - Work with EPA Certified Contractors**
 - History of Successful Cooperation with Tenants, Landlords & CBO's**
-

Lead Primary Prevention Program

- **NYSDOH Pilot Program Grant**
 - **EPA Certified Lead-Based Paint Risk Assessors**
 - **Holistic Inspections**
 - **Bilingual Outreach**
-

The Lead Inspection

- **LPPP inspectors perform lead risk assessments and provide lead hazard reduction education to owners, tenants, superintendents, and landlords. XRF analyzers are used to determine the presence of lead based paint.**



Multi-Family Housing Window Replacement



Partnerships - City of Yonkers

- **Yonkers Building Department**
- **Yonkers Fire Department**
- **Yonkers CDA**
- **Yonkers Tax Assessor**



Yonkers Building Department

- Investigate WCDH referrals related to housing deficiencies**
 - Building Inspectors accompany WCDH staff in critical circumstances**
 - Two Inspectors have been sponsored for EPA Lead Based Paint Risk Assessor Certification**
-

Yonkers Fire Department

- **Residential Fire Safety Investigations**
 - **Follow up on hazards found during Health Department Inspections**
 - **Fire Escape Condition Monitoring**
 - **Inadequate egress conditions**
-

City of YONKERS

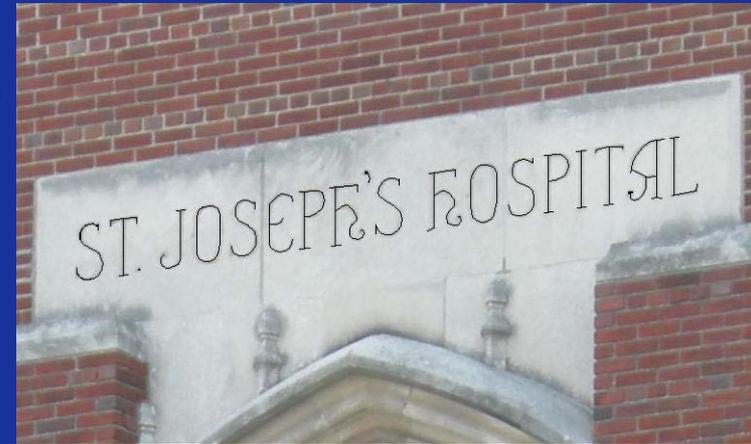
Community Development Agency

- **Urban Renewal Areas Overlap with LPPP Grant Target Area**
 - Nodine Hill
 - Ravine Avenue
 - Alexander Street
 - **Staff trained in Lead Safe Work Practices through WCDH program**
-

Yonkers Tax Assessor

- **Valuable Source of Property Information**
 - **Property Information Portal**
 - **Construction Information and Bldg. History**
 - **Owner Name and Address**
-

Hospitals



Hospital Partnerships

- **Hospitals**

- **St. John's**

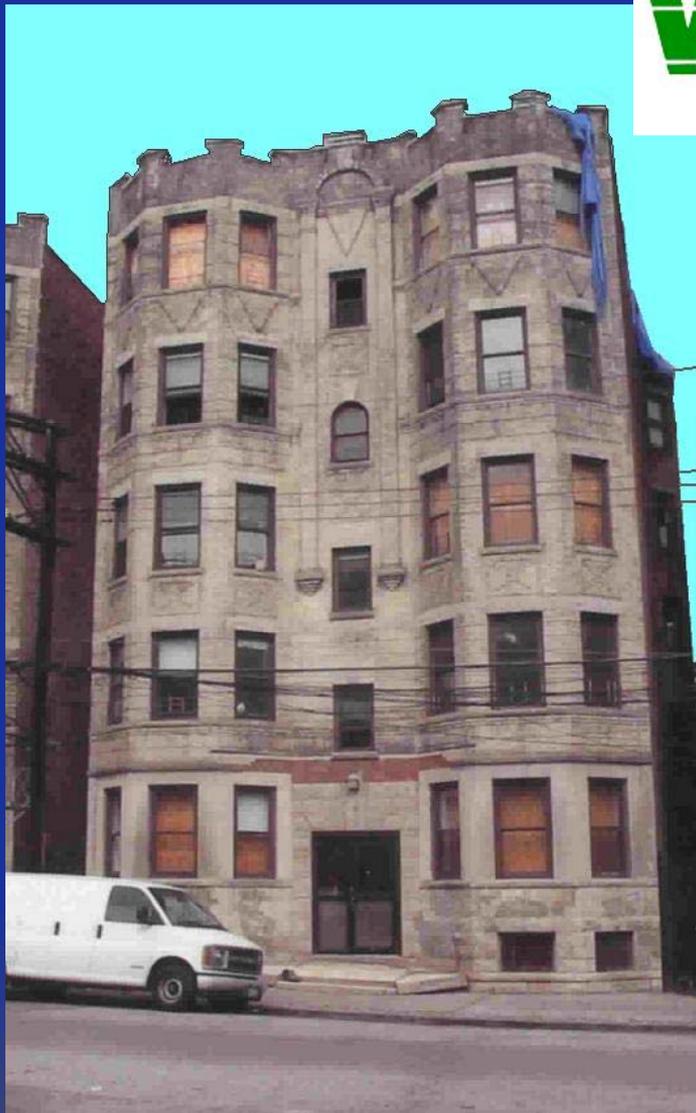
- **St. Joseph's**

- **WCDH has received referrals for Blood Levels below 20 mcg/deciliter**
 - **Investigations have lead to successful remediation projects by Lead Safe Westchester Program**
-

Community Based Organizations

- **WESTHAB**
 - Emergency Family Housing Provider
 - **Cluster**
 - Housing Resource Center
 - **Nepperhan Community Center**
 - Advocate for Positive Social Environmental Change
-

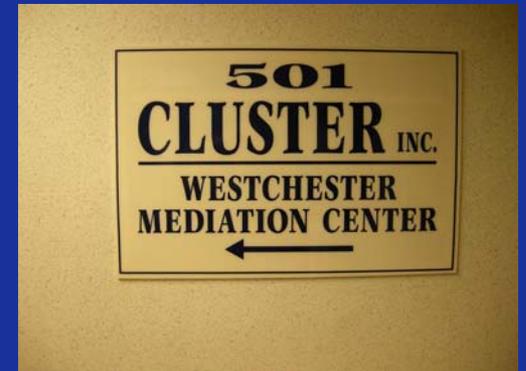
WEST LAB



WESTHAB

- **Recipient of WCDH sponsored Lead Safe Work Practices Training**
 - **Provider of Housing throughout Westchester in key areas**
 - **Valuable resource to residents in need of temporary housing during lead hazard remediation**
-

CLUSTER



CLUSTER

- **Tenant Organizing**
 - **Tenants Rights Advocate**
 - **Landlord tenant relations**
 - **Relocation Assistance**
-

Nepperhan Community Center

- **Prevention Program Coordinator**
 - Drug Use
 - Gang Violence
 - Teen Pregnancy
 - **Academic Enrichment Programs**
 - **Conflict Resolution**
 - **LPPP has given presentation to Gang Violence Prevention Coalition**
-

Multi-Program Collaboration

- CLPPP, WESTHAB and LPPP
 - CLPPP inspected apartment of Lead Poisoned Child in Multi-Family Building Run by WESTHAB
 - LPPP inspectors worked with CLPPP staff to complete risk assessment inspections in 20+ apartments
 - “Checker-boarding” used to abate location of poisoning and remediate all other apartments using lead hazard control methodology
-

OUTREACH

- **Targeted Canvassing Based On**
 - G.I.S. Mapping of Previous Lead Cases
 - Census data
 - Exterior Visual Inspections
 - **Increasing Awareness of Housing Resource Availability**
 - Mailing Fliers
 - Safety Product Distribution
-

**Hudson
River**

**Yonkers 10701 Zip Code
Study Area**

10701

Yonkers

**10701 Lead-Risk
Assessment Locations**

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40°58'26.43" N 73°52'44.39" W

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EDUCATION

Tenants-Landlords-Contractors

- **Lead Safe Work Practices Training**
 - **Interim Control Maintenance**
 - **Field Conferences w/ Bldg. management**
 - **Fire exit plan / practice & clearing fire escapes**
 - **Asthma Inspection / Intervention**
 - **Referrals for Health and Safety Issues**
-

ENGINEERING

Distribution of health and safety products help reduce illness and injury risk

- **Smoke & CO detectors**
 - **Fire extinguishers**
 - **Flash lights**
 - **Energy efficient light bulbs for hallways**
 - **Hypoallergenic mattress covers**
 - **Glue traps**
 - **Radon detectors**
 - **Reachers & grab bars for the elderly**
 - **Multi-outlet strips**
 - **HEPA vacuum loan program**
-

ENFORCEMENT

- **Interpreting and Implementing Public Health Law, Sanitary Codes, and Local Municipal Codes**
 - **The key to safe and healthy housing is personal responsibility, awareness, maintenance, and effective code enforcement**
-

