

Applying ACE Concepts to Healthy Homes

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We're Becoming More Urbanized

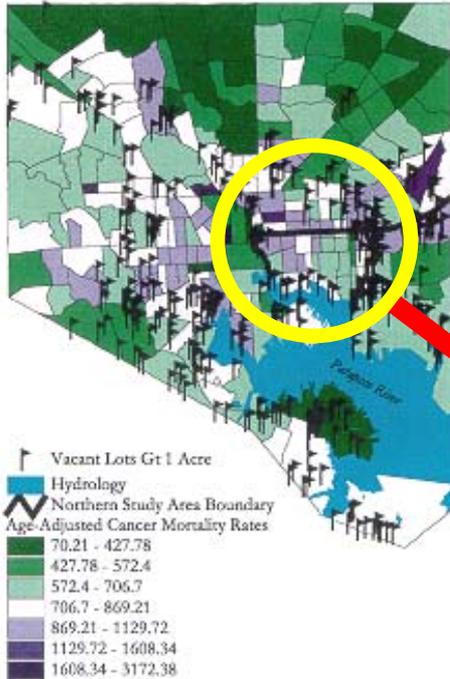
- The health of people living in inner cities remains poorer than for the nation as a whole. Today, the vast majority of people in this country live in cities, and by 2050 over 75% of the world's population will be urban dwellers .
- In Maryland, life expectancy in Baltimore City is 68.3 years which is 13 years less than Montgomery County. The average life expectancy in Montgomery County is 81.4 years .
- This problem also extends to the economically developing world, where most of the mega cities, such as Mexico City, Mumbai and Bangkok, exist.
- Thus, the public health challenge facing us is how we can improve the health of individuals who now and in the future will live in urban environments.

Health Disparities

- It is widely documented that there are disparities in the occurrence of chronic diseases between members of racial and ethnic minorities and more advantaged populations.
- Some chronic diseases for which there are health disparities have an environmental component (asthma, cancer, cardiovascular disease , neurodegenerative diseases). **We still need a better understanding of the levels of chemicals in our environment and how environmental chemicals either CONTRIBUTE to /or CAUSE disease.**
- Health disparities are often associated with **environmental injustice.**

Environment and Urban Health Status in Baltimore

Total Cancer



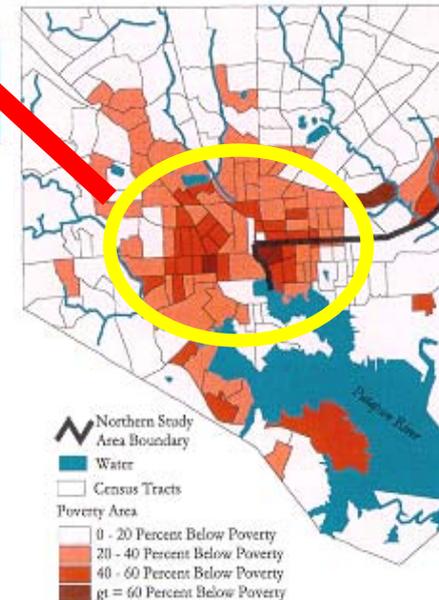
Heart Disease



COPD

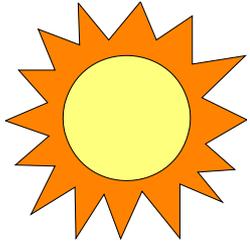


Poverty



- cancer mortality is highest among all US cities
- cancer exceeds heart disease as leading cause of death in African-Americans
- since 1980 incidence of childhood asthma up 200%

ACE IT: For the Prevention of Environmentally-related Diseases



Avoidance (Reduce exposure)

- Environmental-ozone alerts
- Lifestyle – Avoid excessive sun exposure , cigarette smoke
- Clean homes-reduce dust and other chemicals



Chemoprotection (Increase body defenses)

- Dietary
 - chronic diseases(cancer, asthma, cardiovascular, neurodegenerative)
 - lead poisoning(calcium interferes with lead transport from GI)

- Pharmaceutical
 - asprin and colon cancer



Education(Advocate for Interventions)

- Community residents
- Parent's and Children

Forming partnerships between citizen groups , industry, business and government agencies



A= Avoidance

Knowing that there are many toxic agents in our homes so as to reduce or eliminate their exposure

environmental asthma triggers

pets



cigarette smoke

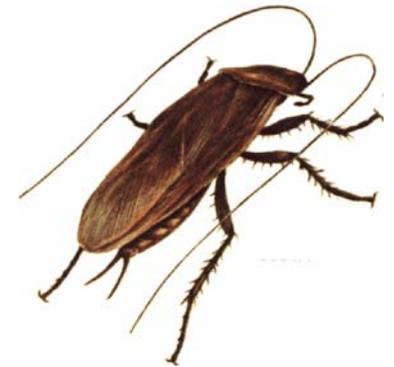


mold

pollen

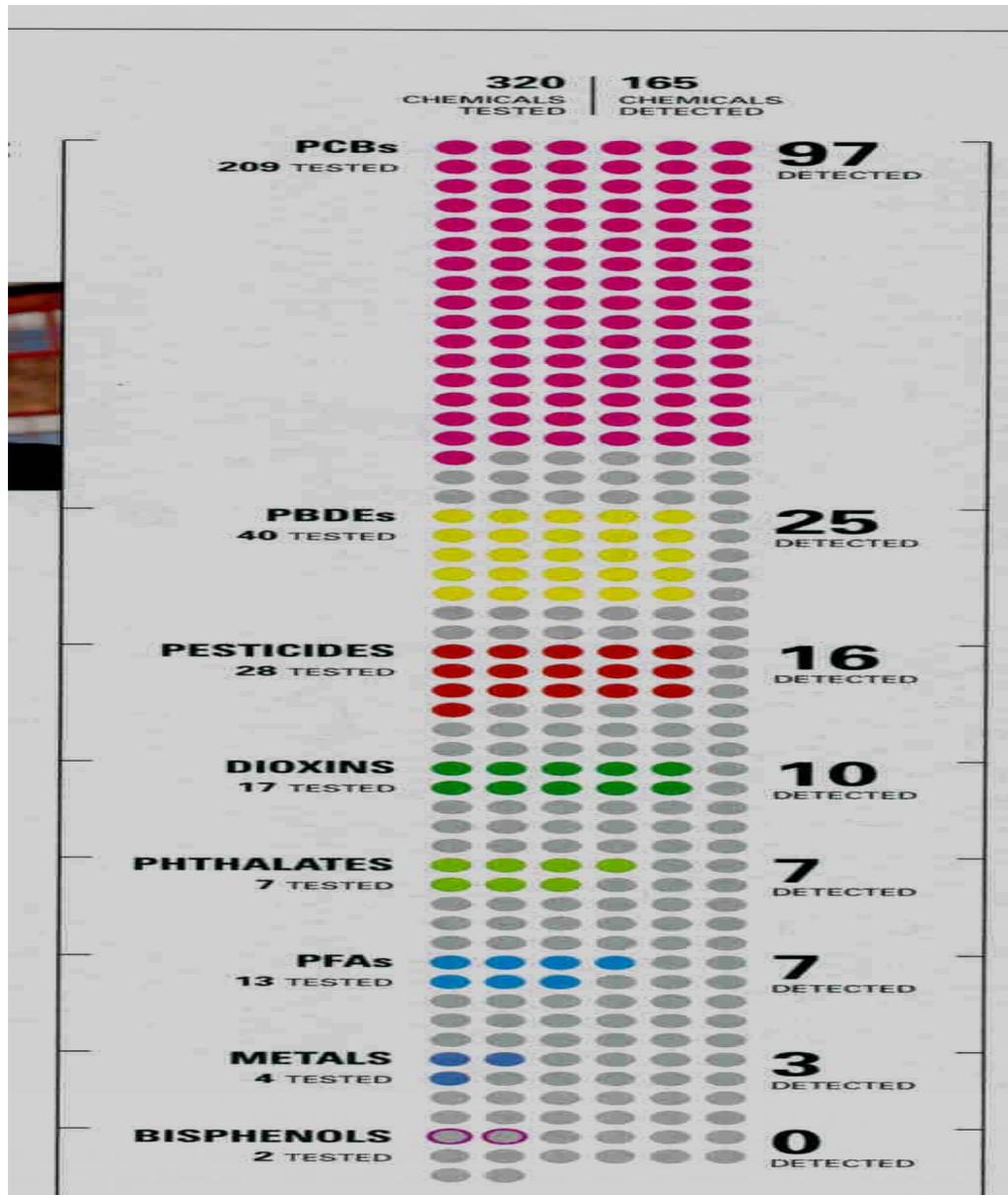


dust mites



cockroaches

Chemicals Found in Us



Everyday Exposures to Chemicals Occurs in the Home



Ruby Alcorn, three, inhales fire-retarding chemicals in dust from fabrics, furniture, and other home products—adding to the dose she took in as a breast-fed baby. Another class of chemicals, called phthalates, is added to plastics, including some food wraps (right), for pliability. Both can cause developmental problems in lab animals, even at relatively low doses.



EXAMPLES of CHEMICALS in the HOME

- **PBDE's**-Used as flame retardants. Cause developmental problems. Found in : foam mattresses and pillows; carpet and padding; chair cushions; electronics
- **Phthlates** -Used to make plastics flexible. Cause problems in male reproductive tract development. Shower curtains; shampoo; plastic bath toys.
- **Bisphenols**- Found in polycarbonate plastics, makes them rigid . Plastic baby bottles; plastic containers; lining of food cans.
-

EXAMPLES of CHEMICALS in the HOME

- **Pesticides.** Pet flea collar; food products; tracked indoors; used in pest management
- **Metals.** Lead paint ; lead toys
- **Metals.** Mercury –contaminated foods; light bulbs.

Green Integrative Pest Management



AP-FILE

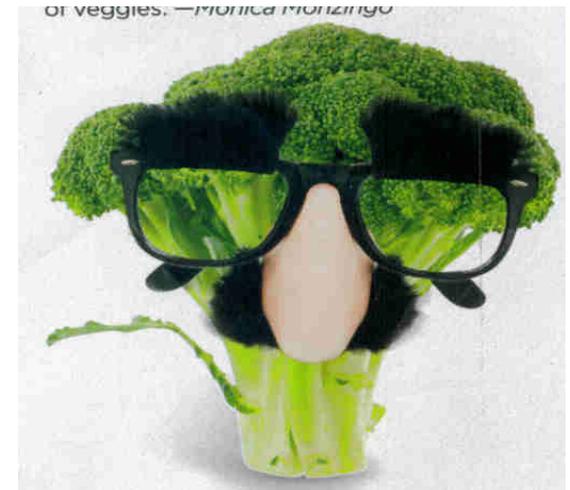
"Green" pest control products, now available more widely in the average grocery store, contain natural ingredients such as citrus.

C= Chemoprotection

Incorporating more fruits and vegetables into our diets so as to increase our inherent defenses against potentially toxic agents in the home

Eat to Delay or Prevent Disease

- Broccoli-sulphoraphane; increases cell defenses
- Carrots- Antioxidants
- Red or purple grapes-Resveratrol(antioxidant)
- Cranberries-Antioxidants
- Blueberries- Antioxidants
- Tomatoes- Lycopene(antioxidant)
- Tea- Polyphenols (antioxidants)



Eat to Delay or Prevent Disease

Green tea fights Parkinson's!

No doubt you've heard about the health benefits of this traditional Asian beverage—it's been shown to lower the risk of certain cancers, cut cholesterol and fight infection, just to name a few. Well, Chinese research suggests it may also help prevent Parkinson's disease, a central nervous system disorder for which there is no known cure. In lab studies, the scientists found that antioxidants in green tea prevent the destruction of neurons in the brain, which leads to the disease.



Add a squeeze of lime to your cup!

A splash of citrus helps your body absorb lots more of green tea's health-boosting antioxidants, a Purdue University study found.

E= Education

Through education we will have a better informed citizenry who can advocate for interventions and changes in policy

Interacting with Students



Interacting with Teachers



Pat Tracey interacting with a resident at the “Day at the Market”



Barbara Bates-Hopkins interacting with a resident at the "Eco Festival"



For Healthy Homes and Healthy Children ACE It





BUILDING A FRAMEWORK FOR HEALTHY HOUSING

2008 National Healthy Homes Conference

The Master Home Environmentalist© Program

A Community-based Educational Intervention Program

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Asthma and Environmental Health Program Manager

American Lung Association of Washington

Master Home Environmentalist Mission

To promote health by reducing
pollutants in the home through
volunteer-based education and action



Master Home Environmentalist Values and Principles

- A healthy home environment promotes a quality of life, particularly for children
- Residents have a right to know of hazards in their home
- A personalized approach is effective in motivating people to improve their home environment
- Residents, through their own actions can make changes in their home to prevent illness
- Volunteer outreach and education enhance health and build a strong community



Cause for Concern: Indoor Air Quality

- According to the Environmental Protection Agency (EPA) we spend up to 90% of our time indoors and our indoor air can be 5 times as polluted as our outdoor air
- And according to both the EPA and the Center for Disease Control (CDC) indoor pollution has been identified as a significant environmental risk to health¹
- Home pollutant exposure may result in asthma, retarded growth, learning disabilities, allergies and cancer
- The cost of preventable childhood related diseases in the US is estimated to be over \$50 billion². This study examined the affects of asthma, neurodevelopmental effects of lead exposure, cancer and other developmental disorders

1. EPA 2004; Landrigan 1997; 2. Landrigan *et al.* 2002



Indoor Air Pollution

- Indoor pollutants and allergens such as lead, tobacco and wood smoke, dust mites, cockroaches, moisture and biological contaminants, and animal dander are known to affect respiratory health and other conditions. Asthma, a chronic inflammatory lung disease, is one health problem that is triggered by environmental hazards and indoor pollution₁
- Asthma exacerbations can be reduced by the use of medications and reducing exposures to environmental triggers₂

1. Custovic and Woodcock 2001 3.Landrigan *et al.* 2002; 3. Ehnert *et al.* 1992; Krieger *et al.* 2005



Indoor Air Pollution

- It is also well known that household dust is a source of a variety of contaminants that can affect children's health₁
- Some studies have stressed the need to control household dust particularly from carpets₂
- Reducing exposures to airborne allergens and pollutants reduces the health burden of asthma and other environmentally-triggered illnesses and significantly improves quality of life

1. Roberts *et al.* 1999; Roberts and Dickey 1995 2. Kreiger *et al* 2002; Roberts *et al.* 2005; Takaro *et al.* 2004



Available Resources

- Despite recognized health problems and interventions, there are few low-cost or no cost resources to help families determine if their home is healthy
- One community-based program that trains volunteers to conduct in-home assessments for environmental health is the American Lung Association of Washington's Master Home Environmentalist© (MHE©) program



The Master Home Environmentalist Program

- The MHE Program is a community-based, volunteer driven program designed to train volunteers to identify sources of pollutants in homes and assist household residents in reducing exposures
- This unique program was developed in 1992 in King County Washington with the support of local public agencies and has been implemented in communities around the country



Master Home Environmentalist Program Theory

- Individuals are motivated to change behavior when they have a sense of self-efficacy (knowledge, belief or expectation that the behavior can be performed successfully); when they have an incentive to perform the behavior, and when they have the expectation that behaviors, once performed, will have positive consequences such as improvement in quality of life
- This suggests that self-management will be accomplished when individuals have the knowledge, skills and incentives to perform a behavior



Historical Overview

- 1988 EPA publishes *The Inside Story, A Guide To Indoor Air Quality*
- 1990 League of Women Voters forms the Home Toxics Taskforce and publishes *Cleaning up Home Toxics: Air and Dust*
- 1992 Intervention modeled after the Master Gardener Model funded by the EPA, administered through the YMCA
- 1993 First training of volunteers conducted and HEAL©'s begin
- 1994 King County Hazardous Waste funds MHE



Historical Overview

- 1996 The Asthma Outreach Project: A promising Approach to comprehensive asthma Management.
Stout, White, Rogers, McRorie, Morray, Miller-Ratcliffe,
Redding ***Journal of Asthma***
- 1997 ALAW begins coalitions to address this work in Tacoma and Seattle
- Behavioral Changes Following Participation in a Home Health Promotional Program in King County, Washington. Leung, Keonig, Simcox, Van Belle, Fenske, Gilbert ***Environmental Health Perspectives***
- 1998 Healthy homes project replicates the HEAL, Seattle Public Utilities joins funding partners, first nationwide training (Tulsa, Oklahoma)



Historical Overview

2000 program expands to Yakima, WA

Asthma and the Home Environment of low income urban children: preliminary findings of the Seattle-King county healthy homes project: Krieger, et al *Journal of Urban Health: Bulletin of the New York Academy of Medicine.*

2002 Recognized by ALA as a Best Practice Program

The Seattle-King County Healthy Homes Project: Implementation of a comprehensive approach to improving indoor environmental quality for low-income children with asthma. Krieger, Takaro, Allen, *Environmental Health Perspectives*

2004 Results of a home-based environmental intervention among urban children with asthma. Morgan, Evans, Stout, et al. *New England Journal of Medicine*



Historical Overview

2005 Recognized by the EPA with a Children's Environmental Health Excellence Award

Become principle partner in CLEARCorps, an Americorps Program that specializes in lead awareness, education and prevention

2006 Evaluation of a Community-Based Outreach Worker Program for Children With Asthma Primomo, Johnston, DiBiase, Nodolf, Noren *Public Health Nursing*

2006 Cost Savings Associated with Home Interventions for Asthma. Atherley, Sullivan, Krieger, Evans-Agnew

2007 MHE is awarded Best Practices designation from ALA National



Program Expansion

- Spokane, Washington
- Tacoma, Washington
- Portland, Oregon
- Tulsa, Oklahoma
- Washington, DC
- San Antonio, Texas
- Boise, Idaho
- Fresno, California
- San Bernardino, California
- Chicago, Illinois
- Bismarck, North Dakota
- Providence, Rhode Island
- Thurston, Chelan-Douglas, Okanogan Counties, and the Colville Tribe in Washington
- Indianapolis, Indiana
- New York City



MHE –Four successful models

- Project #1 – Yakima, WA.
- Project #2 – Yakima, WA.
- *Clean Air For Kids*® - Tacoma, WA
- MHE – Seattle, WA



Master Home Environmentalist Project #1 – Yakima, WA.

Project Time Period:

September 1999 – May 31, 2001

Funding:

\$56,500.00

Funder's:

EPA Region 10, National ALA, ALAW,
Group Health Cooperative

Primary Focus of Grant:

Lead and Pesticide Exposure



Master Home Environmentalist Project #1 – Yakima, WA.

Project Team Representatives:

Memorial Hospital, Yakima Valley Farm Workers Clinic, Yakima Nation Health Services, EPA, Community at large, Group Health Cooperative, Yakima Health District and WA State Migrant Council

Purpose:

To provide ongoing support, recommendations for development and implementation of MHE for Yakima County



Master Home Environmentalist Project #1 – Yakima, WA.

Outputs:

- Training – 35 hours in 12 weeks
- Volunteers – 12 (3 bilingual)
- HEAL's performed – 48
- Community Outreach – 20 events

Outcomes:

HEAL's resulted in 75% behavior change



Master Home Environmentalist Project #2 – Yakima, WA.

Project Time Period:

November 1, 2002 – March 31, 2003

Funding:

\$20,000.00

Funders:

EPA Region 10, Yakima Valley Farm Workers
Clinic

Primary Focus of Grant:

Children's Health Initiative; Do-It-Yourself
HEAL©



Master Home Environmentalist Project #2 – Yakima, WA.

Community Partners:

EPA Region 10, Yakima Valley Farm
Workers Clinic, Yakima Health
District, Memorial & Providence
Hospitals, Yakima Regional Clean Air
Authority, Yakima Nation



Master Home Environmentalist Project #2 – Yakima, WA.

Project Staff

- .38 Project Coordinator; Regional Director

Project Training

- Project Coordinator trained in 1.5 days with a condensed MHE training covering Asthma, Little Lungs Breathing, Moisture and Biological Contaminants, Lead, Dust, Tenant Issues, Indoor Air Quality, Household Chemicals, Pesticides, Second Hand Smoke and the HEAL (Home Environmental Assessment List)



Master Home Environmentalist Project #2 – Yakima, WA.

Outputs:

- Training – 1.5 days
- Volunteers – 4
- HEAL's performed – 14
- Do-It-Yourself HEAL - 25
- Community Outreach – 6 Events

Outcomes:

HEAL's - 100% Behavior Change

DIY's – 88% Behavior Change

HEAL / DIY HEAL - 92% Behavior Change



Clean Air For Kids® - Tacoma, WA

To reduce asthma morbidity in high-risk populations by using a community-based partnership model that incorporates home environmental changes and asthma management



Tacoma Pierce County
Asthma Prevention Partnership



Clean Air For Kids® - Tacoma, WA

Partnership Members:

- American Lung Association of WA
- Tacoma-Pierce County Health dept.
- University of Washington – Tacoma campus
- Local health care providers and clinics
- Additional non-profit, community agencies
- School nurses – 3 different school districts



Clean Air For Kids® - Tacoma, WA

Program Components

- Medical Advisory Board
- Community Outreach
- Master Home Environmentalist Program
- Community-based Asthma Outreach Worker



Clean Air For Kids® - Tacoma, WA



Began implementing
in Spring of 1998
with assistance by
American Lung
Association of
Washington,
Seattle, WA



Clean Air For Kids® - Tacoma, WA

Training Date	Spring 2000	Fall 2000	Spring 2001	Fall 2001	Fall 2002	TOTAL
# enrolled	12	6	21	6	18	63
# graduated	9	5	18	4	15	51

	April 2000- March 2001	April 2001- March 2002	April 2002- March 2003	TOTAL
# HEALS™ conducted	63	75	40	178



Clean Air For Kids® - Tacoma, WA

Number of people with asthma, allergies or both

Asthma	20
Allergies	44 (seasonal allergies = 11)
Both Asthma and Allergies	13



Clean Air For Kids® - Tacoma, WA

Improvements in asthma or allergies
resulting from home environmental assessments

	Number	Percentage
Yes	34	87
No	4	10
Don't Know	1	1.5



Clean Air For Kids® - Tacoma, WA

Percent of families who made behavior changes:

	Yes	No
Did you make changes (n=64)	94	6
Planning to make changes? (n=34)	94	6

General categories of changes made:

- Household cleaning
- Indoor ventilation
- Mattress / pillow covers
- Door mats / shoe removal
- Furnace filters / vent covers
- Washing bedding in hot water
- Reduced indoor smoking



Master Home Environmentalist Program Seattle, WA

- Since 1992 over 700 volunteers have been trained and over 1500 homes have been assessed
- Our strong volunteer base includes people from diverse professions including toxicology, public health, nursing, parents, home inspectors, industrial hygienists, small business owners, green builders, software developers, homemakers, allergists, physician's assistants, interior designers, retailers, undergraduate and graduate students, retired persons, graphic artists etc.
- Many volunteers have conversational language skills other than English including Spanish, Vietnamese, Koreans, Tagalong, Arabic, Swedish, German, French, Dutch, Greek, Italian and Japanese
- Volunteers also come culturally diverse backgrounds such as African-American, Hispanic, Vietnamese, Chinese-American, Filipino, Korean, Native American and Gay and Lesbian community members



MHE Program Components

Seattle, WA

- Beginning in 2005, ALAW became the home of CLEARCorps Pacific Northwest. CLEARCorps (CC), an Americorp program has enabled the MHE program to expand and extend its reach into those communities most in need – immigrant, low-income and communities of color
- CC members are trained in the MHE program and perform HEALs and other community outreach activities
- CC members are housed both at the ALAW and at other community organizations where they provide home assessments and perform outreach to and within their own particular community. Many CC members are bi-lingual or tri-lingual, thereby increasing access to potentially vulnerable populations



MHE Program Components

Seattle, WA

- MHE Steering Committee
- Community Partners
 - International District Housing Alliance; Public Health Seattle-King County; Environmental Coalition of South Seattle; Seattle Public Utilities; King County Hazardous Waste; Refugee Women's Alliance; Community Coalition for Environmental Justice; Solid Ground; Institute of Neurotoxicology and Neurological Disorders; Healthy Buildings, Inc.; Analytical Chemistry; US EPA Region 10; Children's Health and the Environment; University of Washington Seattle and Tacoma; Children's Hospital; City of Seattle
- Volunteers
- CLEARCorps members
- Funding Sources
 - City of Seattle; CLEARCorps USA; US EPA Region 10; King County Hazardous Waste; ALA National; Yakima Valley Farm Workers Clinic, donations



MHE Program – Seattle, WA

2 Volunteer Trainings per year

35 hour volunteer training topics include:

- Moisture & Biological Contaminants
- Asthma and Allergies
- Communication and Behavior Change
- Dust in the home
- Natural Lawn and Garden Care
- Landlord Tenant Rights and Responsibilities
- Toxicology and Lead
- Environmental Justice
- Indoor Air Quality & Ventilation
- Household Chemicals
- Second Hand Smoke
- Home Environmental Assessment List (HEAL) Training
- Community Outreach



Home Environmental Assessment List © (HEAL©)

- The HEAL is a survey that volunteers use during the home visit
- It is an integrated approach to identify numerous potential environmental hazards in the home



The HEAL

- The HEAL identifies everything and anything in the home that could be making people sick
- The HEAL not only assesses the home but also questions the resident about specific behaviors, such as how often the house is vacuumed and dusted, if candles or air fresheners are used, etc.



The HEAL

- Once the potential hazards have been identified, steps are discussed to reduce the family's exposure to these hazards.
- Low or no cost solutions are suggested to make the home a healthier place to live



Common Recommended Changes

- Removing shoes at the door
- Smoking outside and using a smoking jacket and hat
- Reducing use of household hazardous chemicals
- Vacuuming and dusting more often
- Installing dust mite covers on pillows and mattress
- Ventilating more frequently



MHE Success in Changing Behavior

- The home visits resulted in 86% of people making at least one behavior change, 62% make dust or moisture control improvements and 54% made changes due to perceived health benefits

Based on a three month post home visit survey performed by Rainbow Lueng and published in *Environmental Health Perspectives*, 1997, pp 1132-35



The Master Home Environmentalist Program

- The Master Home Environmentalist Program is an effective way to serve community members who have concerns about asthma and other health issues and their home environment
- It's an effective way to leverage limited resources and build capacity in the community



Contact Information

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