Evaluation of the National Healthy Homes Training Center and Network:

December 2005-July 2006

Prepared by the National Center for Healthy Housing
September 2006

Table of Contents

Acknowledgements

The National Healthy Homes Training Center and Network is supported by grants from the U.S. Centers for Disease Control and Prevention, the U.S. Department of Housing & Urban Development, and the U.S. Environmental Protection Agency. These federal partners also provide essential technical support for the Training Center's course curricula.

Tramex, Ltd. generously contributed a free moisture meter as an incentive for students of the *Essentials for Healthy Homes Practitioners* course to fill out the post-training survey. Tramex is a manufacturer of moisture and humidity meters for the building envelope and construction related industries.

Executive Summary

The purpose of the National Healthy Homes Training Center and Network is to break down the isolation and categorical focus of local housing and health programs and to build the capacity of housing and health professionals to identify and remedy housing-related health hazards. The Training Center's flagship course entitled, *Essentials for Healthy Homes Practitioners,* brings together professionals with a variety of perspectives and experiences. Course participants learn about the root causes of health problems in a home and seven principles of healthy housing that can help to resolve them. This report summarizes an evaluation of *Essentials* courses delivered between December 1, 2005 and July 31, 2006. The report examines the effectiveness of the training based on three indicators:

1. Quality of the training (as measured by a course evaluation form)
2. Knowledge gained by the training participants (as measured by a pre- and post-test)
3. Impact of the training on local programs and policies resulting from a trainee's participation in the course (as measured by a follow-up on-line survey of trainees)

Quality of Training

Ninety-five percent of students rated the courses as excellent or good – only1.8% of students rated them as fair or poor. Ninety-two percent of the respondents reported that the content of the course was relevant to their jobs and 95% would recommend the course to a colleague. Nearly 74% of respondents said they could incorporate the practices they learned into their work right away.

Knowledge Gained by Participants

Students were asked to respond to the same 25 questions before and after the training. The percent of students who scored less than 71 percent on the pre-test decreased by 48 percent on the post-test. Conversely, the percent of students with passing scores on the post-test increased by approximately 33 percent. While 126 students passed with their pre-test score, 255 students passed with their post-test score, suggesting that the course was effective in expanding students' knowledge.

Impact on Training on Local Programs and Policies

A key objective of the Training Center evaluation was to examine the extent to which local programs and policies changed as a result of participation in the Training Center courses. Responses to the follow-up online survey of participants showed that 49% percent had made one or more changes to their policies or programs. For those who reported that they had made no changes as a result of the training, the most commonly cited reason was funding, followed by time, legal authority, and uncertainty regarding next steps.

In response to the follow-up survey, one student wrote:

> *As the result of your training, I learned to be more thorough in my inspections. There was a gas water heater in the basement of a family childcare provider, and I used my gas detector around the water heater pipes. The gas detector began beeping repeatedly, and I called the gas company immediately. The gas company came out within minutes and corrected the problem. They said if I hadn't checked it, the family would not have lived. The provider was not aware of the leak, and was very grateful.*

I. Introduction

Healthy Housing is a century old concept that promotes safe, decent, and sanitary housing as a means for preventing disease and injury. Recent research has provided overwhelming evidence that children's health outcomes such as asthma, lead poisoning, unintentional injuries and many others, are directly related to housing quality. Housing quality is increasingly recognized as an important determinant of health disparities, particularly in urban inner-city low-income neighborhoods. A comprehensive, holistic, systems approach to the health problems of substandard housing is an inherently more efficient and effective method of addressing housing based health problems. Yet housing, health, and environmental programs, with a few notable exceptions remain isolated and narrowly focused.

The National Center for Healthy Housing (NCHH) launched the National Healthy Homes Training Center and Network in 2003 to break down the isolation and categorical focus of local housing and health programs and to build the capacity of housing and health professionals to identify and remedy housing-related health hazards. The Training Center is funded by the U.S. Centers for Disease Control and Prevention, the U.S. Department of Housing and Urban Development, and the U.S. Environmental Protection Agency and is the only national training entity addressing this area.

NCHH's mission is to develop and promote practical methods for protecting children from environmental health hazards in their homes while preserving affordable housing. It administers the Training Center through a network of regional training partners including: Boston University, East Central University, Johns Hopkins University, Louisiana State University, Mississippi State University, University of Cincinnati, University of Georgia, University of Illinois at Chicago and the University of Washington. An advisory committee of federal agency staff and national health and housing consultants oversee the development of the Training Center curricula and its implementation (see Attachment A for a list of advisory committee members). The advisory committee and network partners hold an annual meeting to discuss accomplishments, areas for improvement, and strategic future directions for the Training Center. Progress and key issues are also discussed during quarterly conference calls.

The Training Center's flagship course entitled, *Essentials for Healthy Homes Practitioners,* is a two-day course, which brings together professionals with a variety of perspectives and experiences. Course participants learn about the root causes of health problems in a home and seven principles of healthy housing that can help to resolve them. Those principles include keeping homes:

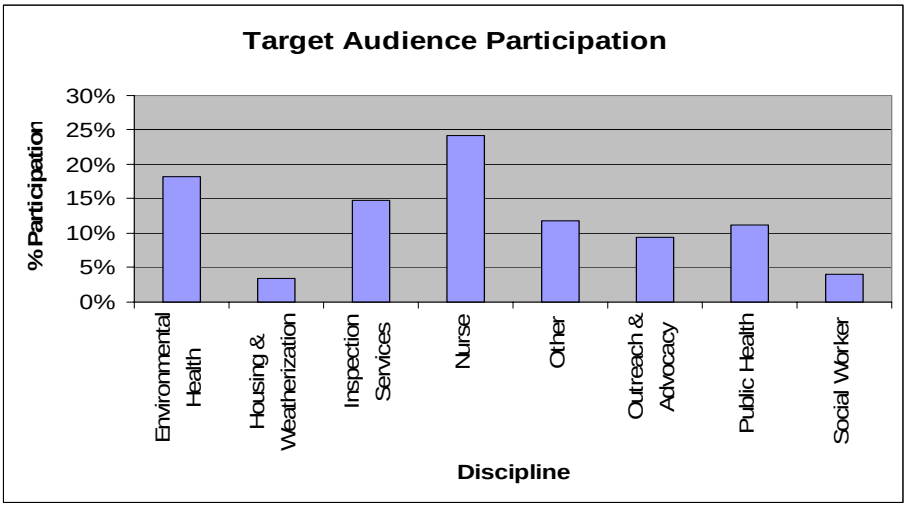
- Dry;
- Clean;
- Pest-free;
- Ventilated;
- Safe;
- Free of contaminants; and
- Maintained.

This report summarizes the results of an evaluation of the *Essentials* courses delivered between December 1, 2005 and July 31, 2006. It examines the effectiveness of the training based on three indicators: Quality of the training, knowledge gained by the training participants, and impact of the training on local programs and policies resulting from a trainee's participation in the course.
The key target audiences for the trainings are: environmental health professionals, public health nurses and other health officials, code inspectors, and housing professionals. Figure 1 illustrates the disciplines of those who attended the trainings. The course evaluation form provided students with four options from which to choose: Housing field inspector, industrial hygienist, nurse, and sanitarian. However, these categories apparently did not cover the breadth of occupations represented in the trainings. Of the 390 responses, 203 were originally coded by the students as "other." We recoded most of these 203 responses into new categories that mostly closely aligned with the participant's occupation:

- Environmental health – includes sanitarian, industrial hygienist, lead professional.
- Social work – includes Indian child welfare, case workers, child care specialists.
- Outreach and Advocacy - includes community health representative, health educator, residence life, community activist, health care counselor, organizer.
- Inspectional services – includes code enforcement official, housing field inspector, health inspector, home inspector.
- Public health includes – case manager, public health professional, respiratory therapist, health investigator, epidemiologist, toxicologist, health scientist, school nurse.
- Housing and Weatherization - includes abatement worker, construction administration, , facilities management, housing rehabilitation, weatherization workers.
- Nurses have their own classification.

About 47 responses remain in the "other" category, which is a reflection of the breadth of the audience trained through the course. Of course, some of the categories may still overlap, e.g. inspectional services and housing and health services.

Figure 1: Target Audience Participation



II. Methods

The project team used three measurement tools for evaluating the *Essentials* course.

1. An evaluation form filled out by students at the end of the training (**Quality of the Course**).
2. Identical pre- and post-tests taken by students before and after the training, respectively (**Knowledge Gained**).
3. An on-line survey of students regarding the impact of the training on their day-to-day activities (**Impact on Programs and Policy**).

Table 1 provides the location and dates of each of the trainings that are included in the Evaluation. The project team made substantial course revisions in November of 2005. Beginning in December 2005, the course offerings reflected those changes. Round 1 pre- and post-tests were evaluated and reported on in 2005 and therefore, have not been included in this evaluation.

Table 1: Training Location and Dates

ROUND 1	
Cincinnati, OH	June 6-7, 2005
Houston, TX	August 8-9, 2005
Providence, RI***	August 17-18, 2005
Baltimore, MD	August 22-23, 2005
Columbus, OH	October 3-4, 2005
Seattle, WA	October 17-18, 2005
ROUND 2	
Columbus, OH	Dec 5-6, 2005
Boston, MA	Dec 7-8, 2006
Mt. Laurel, NJ	Dec 8-9, 2006
Providence, RI	Jan 18-19, 2006
Seattle, WA	Jan 19-20, 2006
Columbus, OH**	Feb 13-14, 2006
Cincinnati, OH	Mar 6-7, 2006
Cincinnati, OH	Mar 8-9, 2006
Vancouver, WA[1]	April 27-28, 2006
Ada, OK	May 2-3, 2006
Atlanta, GA	May 9-10, 2006
Shawnee, OK	May 16-17, 2006
Austin, TX*	May 22, 2006
Chicago, IL	June 8-9, 2006
Cincinnati, OH	June 1-2, 2006
San Antonio, TX	June 23-24, 2006
Baltimore, MD	July 10-11, 2006
New Britain, CT	July 11-12, 2006
Chicago, IL	July 19-20, 2006
* Primarily housing professionals ** Primarily nurses *** Primarily weatherization staff	

Quality of the Course

Trainers provided an evaluation form to participants following each of the trainings. The form consisted of sixteen questions (see Attachment B). Of the 655 students who participated in the training, 526 submitted evaluations (a response rate of 80%).

Knowledge Gained

Trainers administered a pre- and post-test consisting of the same 25 multiple choice questions at the beginning and end of each class. Students submitted 401 pre-tests and 397 post-tests. This pre and post test analysis applies only to the 515 Round 2 students. We compared the pre-tests of all students as a group with the post-tests for all students as a group. We did not compare each individual's pre- and post-test scores.

[1] Only online follow-up surveys were available for the Vancouver training. Vancouver's course evaluations and pre- and post-tests were unavailable and not included in this Evaluation.

Impact on Programs and Policy

The project team administered an online survey (see Attachment D) to all training participants. The survey was a Microsoft FrontPage form made available through NCHH's website. The project team sent an initial request on August 4, 2006 and two reminders to participants on August 14th and August 29th. Those who completed the survey received a copy of the CDC Healthy Homes Reference Manual and were entered into a drawing for a Tramex Moisture Meter (over a $400 value). The project team sent a request to 438 students and received 191 responses, for a response rate of 29 percent of all students. Seventy-five of the 438 students had e-mail addresses that no longer work. Therefore, the response rate of those who received the survey was 53 percent. Table 2 provides information regarding the response rate for each training.

Table 2: Percent of Participants Responding by Location of Trainings

Training Location	Training Dates	% Responding (out of all students in the class)	Number of months between training and survey
Seattle, WA*	Oct 17-18, 2005	35.0%	9.5
Columbus, OH	Dec 5-6, 2005	44.0%	8
Boston, MA	Dec 7-8, 2005	22.0%	8
Mt. Laurel, NJ	Dec 8-9, 2005	35.0%	8
Providence, RI	Jan 18-19, 2006	21.2%	6.5
Seattle, WA	Jan 19-20, 2006	46.2%	6.5
Columbus, OH	Feb 13-14, 2006	48.1%	5.5
Cincinnati	March 8-9, 2006	48.1%	5
Vancouver, WA	Apr 27-28, 2006	40.7%	3
Ada, OK	May 2-3, 2006	45.8%	3
Atlanta, GA	May 9-10, 2006	35.6%	3
Shawnee, OK	May 16-17, 2006	33.3%	2.5
Austin, TX	May 22, 2006	28.6%	2.5
Chicago, IL	June 8-9, 2006	23.8%	2
San Antonio, TX	June 23-24, 2006	60.0%	1
Baltimore, MD	July 10-11, 2006	40.6%	0.5
New Britain, CT	July 11-12, 2006	38.5%	0.5
*From Round 1			

Note: In most classes, there were some students who did not provide an e-mail address so they did not receive the survey. Some students also had incorrect e-mail addresses so requests to them to fill out the survey were bounced back. The percent responding figures do not take this into account so most of the response rates listed are actually lower than the actual figures.

III. Results

Quality of the Course

The program evaluation measurement tool examined students' perception of the course and its value. Ninety-five percent of students rated the courses as excellent or good, in contrast with 1.8% of students who rated them as fair or poor. Ninety-two percent of the respondents reported that the content of the course was relevant to their jobs and 95% would recommend the course to a colleague. Nearly 74% of respondents said they could incorporate the practices they learned into their daily work right away. See Table 3 for these results. The data were fairly consistent across offerings, suggesting the cohort of trainers was able to implement consistent delivery. Table 4 shows the data by training location for selected questions.

Table 3: Key Questions from Student Evaluations

	Excellent	**Good**	**Fair**	**Poor**
My overall evaluation of the course is:	63.7%	29.8%	1.7%	0.2%
	Yes	**No**	**No response**	
Was the content of this course relevant to your job?	89.3%	5.4%	5.4%	
Did the program meet your expectations?	92.7%	3.7%	3.7%	
Would you recommend this program to a colleague?	94.4%	1.5%	4.1%	
	Yes	**Only Some**	**Not at all**	**No response**
Can you incorporate concepts learned during the course into your daily work right away?	71.2%	25.1%	1.5%	2.2%

Table 4: Key Questions from Student Evaluations (by Location)

(Table continues on next page)

Training Location and Date	**N**	**Overall Evaluation[2] (Excellent)**	**Content Relevant to Job?[3] (Yes)**	**Enough Time for Discussion?[3] (Yes)**	**Incorporate Concepts Into Work Right Away?[4] (Yes)**	**Incorporate Concepts Into Work Right Away?[4] (Only Some)**
Cincinnati, OH (June 6-7, 2005)	19	63%	95%	84%	79%	21.1%
Houston, TX (August 8-9, 2005)	19	79%	90%	100%	74%	26.3%
Providence, RI (Aug 17-19, 2005)	34	56%	97%	94%	65%	32.3%

[2] Possible responses are Excellent, Good, Fair and Poor.
[3] Possible responses are Yes and No.
[4] Possible responses are Yes, Only Some, Not at All

Training Location and Date	N	Overall Evaluation[2] (Excellent)	Content Relevant to Job?[3] (Yes)	Enough Time for Discussion?[3] (Yes)	Incorporate Concepts Into Work Right Away?[4] (Yes)	Incorporate Concepts Into Work Right Away?[4] (Only Some)
Baltimore, MD(Aug 22-23, 2005)	16	94%	100%	100%	94%	6.3%
Columbus, OH (Oct 3-4, 2005)	12	83%	83%	67%	100%	0.0%
Seattle, WA (Oct 17-18, 2005)	16	63%	100%	94%	63%	37.5%
Columbus, OH (Dec 5-6, 2005)	22	32%	86%	59%	68%	27.3%
Boston, MA (Dec 7-8, 2005)	49	67%	90%	74%	71%	20.4%
Mt. Laurel, NJ (Dec 8-9, 2005)	11	46%	82%	91%	73%	18.2%
Providence, RI (Jan 18-19, 2006)	41	83%	93%	95%	76%	22.0%
Seattle, WA (Jan 19-20, 2006)	11	64%	100%	73%	82%	18.2%
Columbus, OH (Feb 13-14, 2006)	42	60%	86%	83%	69%	23.8%
Cincinnati, OH (March 6-7, 2006)	10	70%	100%	100%	90%	10.0%
Cincinnati, OH (March 8-9, 2006)	25	48%	92%	100%	80%	20.0%
Ada, OK (May 2-3, 2006)	23	52%	91%	96%	70%	30.4%
Atlanta, GA (May 9-10, 2006)	30	80%	90%	87%	53%	36.7%
Shawnee, OK (May 16-17, 2006)	16	50%	81%	88%	56%	43.8%
Austin, TX (May 22, 2006)	10	80%	100%	90%	60%	40.0%
Chicago, IL (June 8-9, 2006)	17	77%	88%	94%	65%	29.4%
Cincinnati, OH (June 1-2, 2006)	7	86%	86%	100%	100%	0.0%
San Antonio, TX (June 23-24, 2006)	13	85%	100%	85%	85%	15.4%
Baltimore, MD (July 10-11, 2006)	28	50%	82%	96%	61%	35.7%
New Britain, CT(Jul 11-12, 2006)	42	60%	83%	91%	74%	26.2%
Chicago, IL (July 19-20, 2006)	13	77%	100%	100%	92%	7.7%

NCHH held regular debriefs with the trainers to highlight what worked well and to identify areas for improvement. NCHH dedicated special attention to any course scoring lower than 50% on the overall evaluation assessment. Only three courses scored less than 50% and the debriefs revealed that participant attitudes, weather, and the combination of trainers had an impact on the overall evaluation assessment.

Knowledge Gained

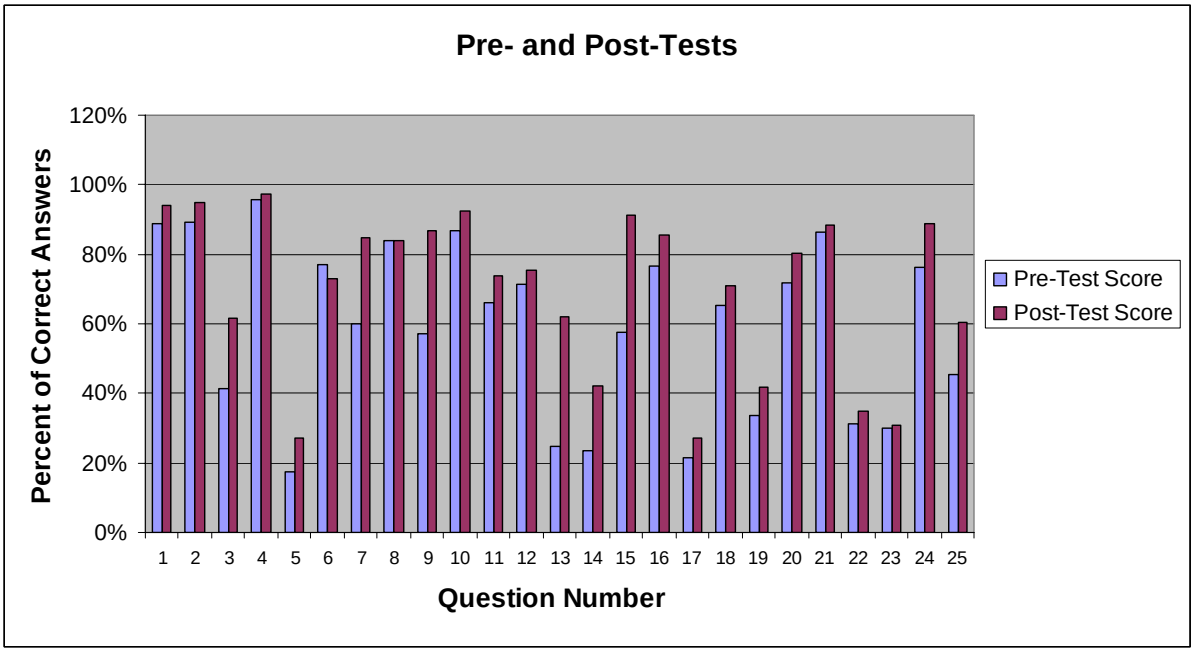
Table 5 illustrates the change in student scores from pre- to post-test. Scores are broken into four categories. The percent of students who scored less than 71% decreased by 48 percent on the post-test. Conversely, the percent of students with passing scores on the post-test increased by approximately 33 percent. While 126 students passed with their pre-test score, 255 students passed with their post-test score, suggesting that the course was effective in expanding students' knowledge base.

Table 5: Change in Scores from Pre-Test and Post-Test

Test Scores	# of Pre-Test Scores by Category	# of Post Test Scores by Category	% Change
0 – 50%	59	14	-76%
51-70%	216	128	-41%
71-100%	126	255	102%
	401	**397**	

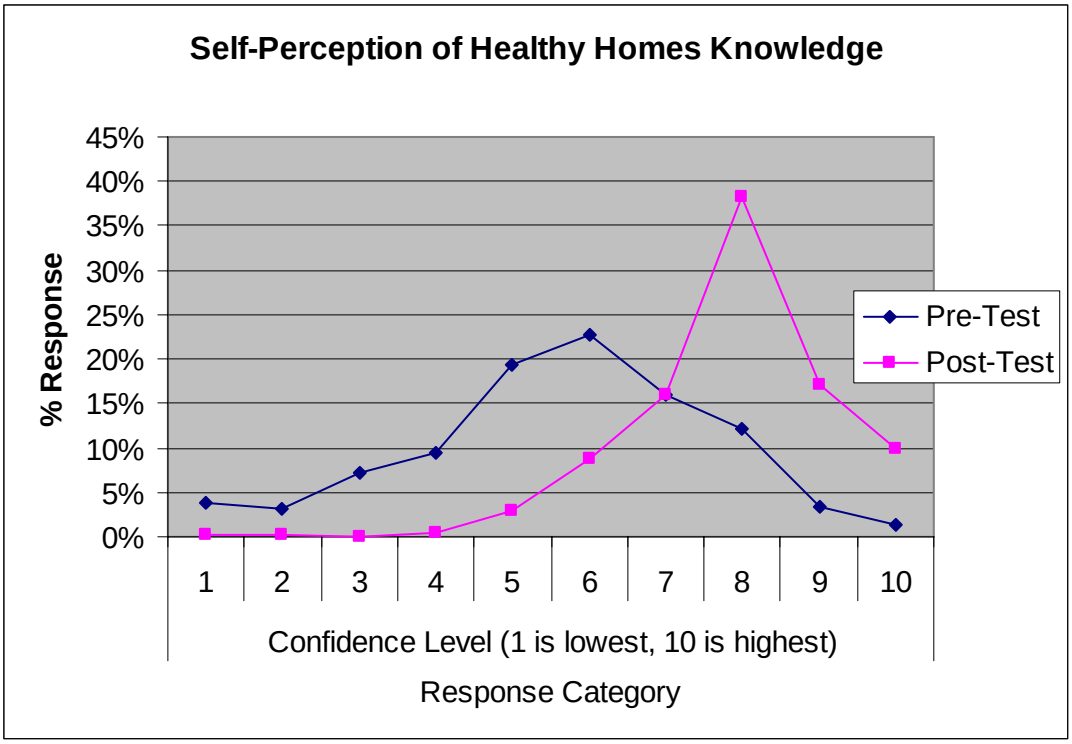
Students were asked to respond to 25 questions at the outset of the training, and the same questions at the end of the second day of the training. Figure 2 shows the change in scores by test question (see Attachment C for the test questions). On average, test scores improved by 10.81 percentage points, with a maximum improvement on questions 7 (ventilation), 9 (injuries), and 13 (integrated pest management). For question 6 which was related to contaminants there was a decrement in the average test scores of 3.9 percentage points. Our hypothesis is that this question was confusing to students.

Figure 2: Pre- and Post-Test Scores by Test Question



Students were also asked to rate their own perceptions of their knowledge of healthy homes issues (see Figure 3). Students rated their knowledge on a scale of 1 to 10, where "1" was knowledgeable and "10" was very knowledgeable.

Figure 3: Self-Perception of Healthy Homes Knowledge



Impact on Programs and Policy

The purpose of the Training Center is to provide practitioners with the necessary skills in healthy housing so that they may identify and recommend treatments for a broad array of health and safety hazards in housing. As such, a key objective of the Training Center evaluation was to examine the extent to which local programs and policies changed as a result of participation in the Training Center courses. Nearly 74% of training participants reported on their course evaluation form that they could incorporate concepts learned during the course into their daily work right away. Responses to the follow-up online survey of participants showed that 49% percent had made one or more changes to their policies or programs (see Attachment D for the online survey questions).

For those who reported that they had made no changes as a result of the training, the most commonly cited reason was funding, followed by time, legal authority, and uncertainty regarding next steps. Some remarked that they were taking a gradual approach to transitioning to healthy homes practices. Of the 191 respondents to the follow-up online survey, nine responded that they had made no changes to their daily practices and 54 respondents reported that they experienced no barriers to implementation.

Table 6 – Barriers to Implementation of Healthy Homes Programs

No barriers	54	34.4%
Yes, there are barriers	103	65.6%

Barriers Identified		
Funding	53	51.5%
Time	26	25.2%
Rules	23	22.3%
Unsure	23	22.3%
Training	22	21.4%
Residents	20	19.4%
Other	17	16.5%
Management	12	11.7%

Respondent Comments Related to Barriers to Implementation

We have a program in place due to grant funding. When funding disappears so may the grant funded positions. However, the program is now "on the map" due to funding. Prior to grant funding, there was a lack of management support, insufficient funding, lack of training resources, lack of time to address all needs in the community, and lack resources to leverage to build partnerships.

I agree with educating families with concepts discussed in this course. However, the availability of funding to supply renovations, etc. is the issue.

I am unsure of how to put various aspects of the training into practice because of my particular responsibilities as public health investigator.

We have competing priorities and limited staff time and resources.

Codes are not specific enough to fully address some housing issues.

Even though a problem may be identified within a client's home, most have limited means to address these problems. Many are not financially able to make major renovations or do not perceive it to be a problem of high priority.

Code enforcement department is overwhelmed with existing healthy homes issues. Referral for property owners to receive additional information or requirements to repair are sometimes deferred. Not much teeth to codes to persuade property owners to comply, without strict enforcement.

We can let residents know about these concerns, but we do not have the funding to make or help pay for repairs.

Students responded that the most useful modules of the training were the sections related to keeping homes dry (31.5%), contaminant-free (23%), and pest-free (13.9%).

Respondent Comments Regarding Their Use of the Skills They Gained During the Training

All aspects are used in one of our HUD grants. I am attempting to enlighten my superiors that our program should incorporate this as part of our normal home inspection and educational activities.

The training has allowed me to better understand how to present projects and initiatives to secure funding.

When working with local housing and health officials, I remind them to look for all aspects of what could be causing the problem. I have them remove their blinders and look around.

The training changed my focus from what previously was a single purpose program (lead poisoning) to looking for opportunities to expand the program into a complete healthy homes focus.

The continuous "mental imprinting" of keep it dry, keep it clean and pest free. We are including your healthy homes survey on our laptops for our field work but currently we are doing a "mental survey" of the home while we are focusing on lead poisoning and will bring issues to the family's attention and give referrals.

We are beginning a Healthy Homes Pilot Inspection Program and this training was shared with colleagues. We are hoping to invite the trainers to provide this training to housing staff.

I often refer back to my manual when instances come up where I see need for improvement regarding air quality and home repair. The sections on Keep it Dry-Clean-Safe-Ventilated and avoid contaminants have been most helpful.

While my organization and job goals focus on lead in the home, increased knowledge about asthma triggers, mold, circulation, pests, etc. allows for broader discussion of the home environment during trainings when the inevitable, "what about mold?" type questions arise.

We provide materials, such as copper gauze, foam, non-toxic traps, door sweeps, cleaning supplies, etc.

I answer calls from the public mainly about lead paint, however, more frequently these callers also ask about mold, and I have advised these callers about how to deal with these household issues, and how to find qualified technicians.

Respondent Comments Regarding the Impact of the Training on Services

When I go on mold inspections, I am more aware of the potential for larger moisture problems being the cause of the mold. For example, whether foundation problems might be a cause, or if the roof has leaked.

A client who was an asthmatic kept having symptoms. I discussed things like an area to "walk off" dirt/dust/allergens/irritants from footwear and the need for regular dusting/vacuuming/mopping when needed.

Staff expressed appreciation and increase in knowledge after attending the course, dispelling some misconceptions that some had as well. Staff provide advice to clients on a daily basis using the integrated healthy homes approach. Most notably, staff that conduct lead risk assessments and inspections identify other home-related hazards while in the home. Through increased knowledge, staff feel more comfortable to address these issues where they might have ignored them before due to lack of understanding. I have also used the training information in educational presentations and handouts.

We are testing smoke and CO detectors; identifying moisture issues; identifying the possible presence of lead, asbestos, mold, non-optimal water supply, etc; and we are identifying trip and/or fall hazards.

There was an EBLL child living in a rented unit, where there were water leaks and mold growth. I told the health inspector to mark it down and relay it to the people who would handle it. I explained to them that they should not just look at lead paint, but what other factors could be causing a problem.

If we visit a home for an EBL investigation and notice that the house has no fire detectors, unsure of radon test results, mold issues are identified, pest control issues, then we can refer to our known resources to assist the homeowner in addressing those issues as well.

Two clients since then have had rat problems; I've given them the IPM handbook and we've done clean up and patched holes. We also performed carpet removal and replacement with hard surface in two instances. Clients reported fewer breathing problems afterwards.

We are attempting to incorporate this course as part of our new hire training program. We are also modifying our inspections to include some of the issues mentioned in your program.

The training resulted in an increased interest in providing healthy homes training for the entire staff here at the health district.

In response to the question "has the training affected your (or your employer's) plans for new services, service enhancement or changes in policy," nearly half of the respondents said yes. Eighty-four of the 191 respondents said that there was no impact yet. Eighty-two respondents said there had been an impact. The most commonly cited impacts were enhanced education efforts, better coordination of home visits, and increased housing code enforcement (see Table 7).

Table 7: Impact of Training on Services

Yes, there has been an impact	82	49.4%
Enhanced education efforts	59	72.0%
Coordination of home visits	26	31.7%
Other	18	22.0%
Increasing code enforcement efforts	16	19.5%
Improving housing codes	12	14.6%
Reducing agency duplication	8	9.8%
No impact	84	50.6%

Note: Respondents could choose more than one impact.

In response to the question "how much have your clients or constituents benefited from the knowledge and skills you gained through the training," 30 percent of the respondents stated that their clients had significantly benefited. Nearly 33 percent stated that their client moderately benefited (see Table 8).

Table 8 – Extent to Which Participants' Clients Benefit

Scale	Number	Percent
Significantly	58	30.4%
Moderately	62	32.5%
Minimally	42	22.0%
Not at all	19	9.9%

Respondent Comments on How Their Clients Benefited From the Knowledge and Skills the Respondent Gained Through the Training

The entire inspectional staff will be receiving training from our local injury free coalition. In addition, management has committed to supporting the local FAM Allies Coalition with an environmental representative. These partnerships will lay the framework for a broader based strategic intervention for low-income families with children that are at-risk for lead poisoning or asthma.

Several successful exterminations for families who had had traditional and inadequate services from pest management companies. I am able to do demonstrations of how they can exclude pests, clean, etc.

An asthmatic family removed moldy carpet from the basement and found asthma symptoms to be greatly reduced.

The Healthy Homes Program worked with the City Development Department and a local housing partnership to develop specs for an affordable, high performance healthy home rehab.

Information from the training is included in educational presentations and handouts. Our Healthy Homes for Childcare Grant Manager has a plethora of stories from satisfied at-home childcare providers.

With this additional training and information, I consider myself as knowledgeable as there is, in my jurisdiction, regarding indoor air/housing and other related issues. I am more confident responding to issues and giving my thoughts for resolutions.

Weatherization auditors are sensitive to occupant health. For instance, a household member has asthma and allergies. When insulating her stucco home, through discussion with the auditor, it was determined to insulate from the outside of the home rather than the inside which would cause more dust. Moisture control is now routinely addressed with weatherization clients and auditor will install continuous run exhaust fans depending on the make up of the family and the environment of the home.

Seventy-three percent of the respondents estimated that 1-25 of their clients had benefited from the training. Sixteen percent of participants responded that over 25 of their clients had benefited. Just 10 percent of participants responded that none of their clients had benefited.

Modifications to the Training
Several topics were suggested as additions to the training. See Figure 4.

Figure 4: Topics, Exercises or References to Add to the Training

Topics	
Air fresheners and candles	How to implement training in work
Allergen producers	How to work with public housing agencies
Ants	Implementing IPM
Asbestos	Insulation
Bed bugs	Integrated HH and lead hazard control work
Beneficial overlap between HH practices and energy conservation	Kitchen and food safety
Building materials	Low-income weatherization auditor training
Emergency preparedness	More tribal experiences
Falls	Motivating tenants and landlords
Falls, fires and poisonings	**Nothing additional needed (15 mentions)**
Finding contractors that understand HH issues	Nursing focus
Food illness management	Prioritizing conflicting approaches (e.g. moisture control & energy efficiency)
Foundation issues	Private sector support of local health initiatives
Future research needs	Safety during hurricanes and storms
Grants	Septic system/sewer clean up
Health concerns affecting adults	Skin related illnesses
Health symptoms to look for	Smoke and CO detectors
Heat related safety	Tenant specific information
Home health nurse focus	Water related health hazards
How different professions need to work together	Working with landlords
Exercises	**References**
Examples of actual inspections	Local referral list
More visual examples	Region specific information
Practical "how to" inspection and identification of problems in the field	Reprintable handouts
Site visit (2 mentions)	Sample templates for home visits
	Success stories from other healthy homes programs
	Ventilation modification "how to"

Respondent Comments on the Course Content

Some obvious examples where health home and energy conservation practices overlap would be beneficial - being able to show a dual benefit for some practices is a good selling point.

If you are going to have a diverse audience, such as housing inspectors, health inspectors, social service people, and nurses, you need to cut down on the medical terms and focus on how they all need to be part of the solution and work together.

I would like to see more topics in the health effects that lead exposure causes not only to children but also in adults.

I think perhaps it would be more effective to discuss more ways to implement the training into our work. Perhaps also making the trainings a little more specific to the region that they are being taught.

So much of "Healthy Homes" depends upon the motivation of tenants and landlords (humanity in general!) to actually participate in maintaining a healthy lifestyle and environment. I'm inclined to think we need training in how to motivate people to take control of aspects of their life which can impact their living conditions.

*The length of the training should be expanded or offered as an optional add-on to include an emphasis of the practical "how to" inspect and identify problems in the field, application and analysis of results from basic equipment such as a moisture, CO, CO2,and RH meter. Also would like integrated healthy home and lead hazard control work *detailed* specs and guidance such as inclusion of IPM, mold removal, etc with lead hazard control specs. This may already be a part of the Lead Safe and Healthy Homes work practices course but it needs to also be a standalone guidance document.*

The introduction the first day is much too long and elementary if the audience has a background in public/environmental health. After the morning session - the training was engaging, useful, and interesting.

Participants suggested they would like additional training in the following disciplines:

- Mold and mildew removal
- Living safety with a septic system
- Injury prevention in the home
- Emergency preparedness for homes and centers
- Community training for housing-related community advocacy organizations
- Principles of cleaning a home or apartment
- Asbestos
- Implementing healthy homes practices in renovations and remodeling

IV. Conclusions and Recommendations

This evaluation examined a national multidisciplinary training effort. It looked at the quality of the training, the extent to which the training participants increased their level of knowledge, and the impact of the training on programs and policy. Evaluation scores were overwhelmingly positive and show that the Training Network is playing a key role in meeting a significant national need for interdisciplinary training. Participants demonstrated improved knowledge and confidence regarding their mastery of the principles taught through the course. Several instances of local impact were identified, including lives saved and programs changed to reflect the principles taught by the course.

Changes to the measurement tools, particularly the course exam, are needed to accurately reflect knowledge gained. The process of conducting future follow up evaluations should also be changed to allow for the collection of more specific and timely information. The evaluation results suggest that the following course improvements should be made:

Recommendations

1. Score Pre- and Post-Test On-site: To better measure knowledge gain, the pre-test and post-test should be scored on-site at the training. Trainers can collect the tests and determine the score for each student and then talk briefly with each student about the questions they answered incorrectly. Students will benefit immediately from trainer feedback and NCHH will be able to collect more accurate information on knowledge gain.

2. Address Gaps in Student Diversity: The analysis of student occupations showed that housing professionals attend the training in smaller numbers than students from other occupations. There may be specific factors that impede attendance by housing professionals. Code inspectors, for example, may not attend in large numbers because it is difficult for them to spend two days out of the field. Other housing professionals may not feel that the course is targeted enough to their work. NCHH needs to identify the factors that prevent these professionals from attending and consider how to address them. It may be useful to market the course through various associations that represent housing professionals and to offer the course in conjunction with other events or conferences.

3. Future Follow up Evaluation: The results of the follow up survey may have been impacted by the range of time between courses held and the August 2006 survey. As Table 2 shows, some students had taken the course 9 ½ months before the survey while others had taken it just several weeks before. Students who took recent trainings are likely to have more accurate recollections of the course but may have fewer implementation results because they simply have had less time. In the future, NCHH will administer a rolling follow up survey so that there is only a range of 4 – 6 months between the time students take a course and the time they receive the follow up survey, with approval from our federal partners.

Attachment A

Healthy Homes Training Center and Network - Work Group Members

MEMBER	AFFILIATION
Network Partners	
Bill Menrath	University of Cincinnati
Bobbie Dixon Shaffett, Ph.D.	Mississippi State University - School of Human Sciences
Chuck Treser	University of Washington
Claudette Reichel	Louisiana State University
Jorge H. Atile	University of Georgia
Leslie Nickels	University of Illinois at Chicago
Mary Doyle	Johns Hopkins University
Pat Bohan	East Central University
Patricia Hynes	Boston University
Network Partners - Other Representatives	
Barb Boylan	Training & Project Management (University of Cincinnati)
Jody Lally	Boston University
Megan Sandel	Boston University
Sal Calli	University of Illinois at Chicago
Scott Clark	University of Cincinnati
Tracee Mayfield	Seattle-King County Public Health (University of Washington)
Consultants/Other Members	
Armand Magnelli	Livable Housing
Arnie Katz	Advanced Energy
Asa Bradman	School of Public Health/UC Berkeley
Dennis Jordan	Alameda County Lead Poisoning Prevention Program
Dennis Livingston	Community Resources
Don Rivard	Rivard & Associates
Ellen Tohn	ERT Associates
Heidi Shaw	National Environmental Health Association
Jane Malone	Alliance for Healthy Housing
Joe Ponessa	Rutgers University
Kevin Kennedy	Children's Mercy Hospitals and Clinics - Allergy, Asthma, Immunology
Lupita Chapa	School of Public Health/UC Berkeley
Nathan Yost	3-D Building Solutions
Ralph Scott	Alliance for Healthy Housing

Randy Hirschhorn	Hirschhorn Consultants
Ruth Ann Norton	Coalition to End Childhood Lead Poisoning
Stephen Frantz	Global Environmental Options
Sue Gunderson	CLEARCorp
Terry Brennan	Camroden Associates
Tom Dickey	National Environmental Health Association

Federal Partners

Clive Brown	Centers for Disease Control and Prevention, National Center for Environmental Health Air Pollution & Respiratory Health
Dean Seneca	Centers for Disease Control and Prevention
Deb Millette	Centers for Disease Control and Prevention
Edward Thomas	Environmental Protection Agency
Emily Williams	Department of Housing & Urban Development, Office of Healthy Homes and Lead Hazard Control
Eric Werling	Environmental Protection Agency
Jeremy Ames	Environmental Protection Agency
Karin Mack	Centers for Disease Control and Prevention, National Center for Injury Prevention and Control
Kathy Seikel	Environmental Protection Agency
Martha Berger	Environmental Protection Agency
Martin Nee	Department of Housing & Urban Development, Office of Healthy Homes and Lead Hazard Control
Mary Jean Brown	Centers for Disease Control and Prevention, National Center for Environmental Health Lead Poisoning Prevention
Peter Ashley	Department of Housing & Urban Development, Office of Healthy Homes and Lead Hazard Control
Sharunda Buchanan	Centers for Disease Control and Prevention, National Center for Environmental Health
Suzanne Gaynor	Department of Housing & Urban Development, Office of Healthy Homes and Lead Hazard Control
Tara Jordan	Department of Housing & Urban Development, Office of Healthy Homes and Lead Hazard Control

NCHH Staff

Rebecca Morley, Executive Director
Tom Neltner, Director of Training and Education
Dave Jacobs, Director of Research
Susan Aceti, Project Coordinator
Joanna Gaitens, Analyst (Healthy Housing Solutions)

Attachment B- Course Evaluation

National Healthy Homes Training Center and Network
Essentials for Healthy Homes Practitioner Course

Training Dates: *[FILL IN DATES]* Location: *[FILL IN LOCATION]*

Course Evaluation

1. My **overall** evaluation of the course is: ____ excellent ___ good____ fair___ poor

2. Circle "yes" or "no" for the following items:
   a. Did the program meet your expectations? YES NO
   b. Would you recommend this program to a colleague? YES NO
   c. Was the content of this course relevant to your job? YES NO
   d. Was there enough time for discussion and questions? YES NO

3. To what extent did the program meet the course objectives?

   ____ completely ____ much of it ____ only some ____ not at all

4. Can you incorporate concepts learned during the course into your daily work right away?
   ____ yes ____ only some ____ not at all

   If not at all, why not?

Scale:

Excellent 5	Good 4	Average 3	Below Average 2	Poor 1

5. Overall quality of presentations: Please circle number (Scale above)

a. Clarity of presentation	5	4	3	2	1
b. Relates material to problems and issues in my practice	5	4	3	2	1
c. Questions and discussion	5	4	3	2	1
d. Case studies and exercises	5	4	3	2	1
e. Audio-visual aids	5	4	3	2	1

   Additional comments:

6. Overall quality of facilities. Please circle number (Scale above)

a. Instructional facilities	5	4	3	2	1

b. Meals/breaks 5 4 3 2 1
c. Ease of registration 5 4 3 2 1
d. Additional comments:

7. How did you learn about this course?

8. What is your occupation? Please check one.

Housing field inspector_____ Nurse_____ Sanitarian _____

Industrial Hygienist _____ Other (specify): _____

9. Where do you work? Please check one box.

☐ Local Government
If yes, check one: Housing____ Environmental Health_____ Health Department_____

☐ State Government_____
If yes, check one: Housing____ Environmental Health_____ Health Department_____

☐ Federal Government _____

☐ Other (specify):_____

10. INDIVIDUAL FACULTY EVALUATION

Scale:

Excellent 10-9	Good 8-6	Fair 5-4	Poor 3-0

Please rate the presenters using the above scale. Circle your response

Name of Presenter:

Well-prepared 10 9 8 7 6 5 4 3 2 1 0
Knowledgeable 10 9 8 7 6 5 4 3 2 1 0
Enthusiastic presentation 10 9 8 7 6 5 4 3 2 1 0
Easily understood 10 9 8 7 6 5 4 3 2 1 0
Comments:

11. What additional info do you need to help you in your work?

12. What did you like **best** about the course?

13. What did you like **least** about the course?

14. What issues should have been covered that were not?

15. What do you think your agency would need to incorporate a comprehensive healthy homes approach into your regular field inspections?

16. Do you have any ideas or general comments for future programs?

Were the following objectives met?
Required for Nurses to Receive Continuing Nursing Education Credits

OBJECTIVES		
1. Describe at least four housing conditions and the health problems associated with them.	Yes	No
2. Demonstrate how to characterize risk using the epidemiological triangle.	Yes	No
3. Identify 3 populations that may be at higher risk for housing related disease and injury.	Yes	No
4. Identify three important housing systems that contribute to a comfortable living space.	Yes	No
5. Identify three types of codes that can be used to enforce remediation of housing-based health threats.	Yes	No
6. Name three health hazards in the home that are related to excessive moisture.	Yes	No
7. Identify four sources of moisture in the home.	Yes	No
8. Describe five strategies for controlling moisture in the home.	Yes	No
9. List three contaminants or allergens that are frequently found in house dust and their health effects.	Yes	No
10. Describe three ways allergens or contaminants get into house dust.	Yes	No
11. Identify at least three strategies to reduce allergens or contaminants in house dust.	Yes	No
12. Name three illnesses or injuries associated with pest infestation.	Yes	No
13. Identify three clues of pest infestation.	Yes	No
14. Identify the three strategies associated with an IPM approach.	Yes	No
15. Name two illegal pesticides that may be used in the home.	Yes	No
16. Name five unhealthful conditions associated with poor ventilation.	Yes	No
17. List five things in a household that need ventilation.	Yes	No
18. Name three things that power airflow in a building.	Yes	No
19. List at least three household contaminants that can be removed by ventilation.	Yes	No
20. Describe two ways ventilation reduces air contaminant levels	Yes	No
21. Explain the difference between an injury and an accident.	Yes	No
22. Name the three most common home injury related causes of death.	Yes	No
23. Name five locations to look for safety hazards in the home.	Yes	No
24. Name five ways to prevent home injury.	Yes	No
25. Identify at least four contaminants in the home and strategies to prevent, contain or control them.	Yes	No
26. Describe at least four ways that contaminants get into the home.	Yes	No

27. Identify at least three health effects and their associated contaminant.	Yes	No
28. Name at least three systems that require ongoing maintenance.	Yes	No
29. Identify two maintenance actions that require the use of a professional.	Yes	No
30. Name at least two provisions of a code that could be used to cite a hazard in the home.	Yes	No
31. Explain why a partnership with the community is essential.	Yes	No
32. Identify five important players involved in healthy homes issues.	Yes	No
34. Identify three sources of data and where you might find them.	Yes	No
33. Explain why data collection and analysis are important in delivering healthy housing services.	Yes	No
35. List two things that could be observed in a home that must be reported and two that are discretionary.	Yes	No

Attachment C – Pre- and Post-Test

1. Which population is at highest risk for housing-related disease and injury?
A. Adult females, B. Children, C. Adult male, D. Individuals with poor nutrition

2. Which of the following health conditions is most closely associated with excess moisture in the home?
A. Lung cancer, B. Stomach illness, C. Central nervous system disorders, D. Asthma

3. Which source of moisture is likely to lead to major mold growth and structural damage to the home?
A. Damaged flashing around chimney, B. Cooking, C. Condensation on cold water pipes, D. Plugged drain line on air conditioner

4. Clothes dryers should be vented to:
A. Unoccupied areas of the home such as a storage closet, B. Basement, C. The outside, D. Anywhere if it uses electricity and not natural gas.

5. Which of the following is the most effective strategy that can be used to decrease allergen levels in the home?
A. Cleaning regularly with a damp mop, B. Applying registered pesticide proven to kill dust mites, C. Dusting surfaces regularly with dry cloth, D. Cleaning regularly with a vacuum that has a HEPA filter

6. The most significant source of contaminants into a home is contaminants:
A. Brought in from outside, B. Grown inside the home, C. Generated by the building structure and utilities, D. All of the above

7. Which type of ventilation is more efficient for removing contaminants created from cooking?
A. Local exhaust ventilation, B. Whole house ventilation, C. Counter fan, D. Stove fan that filters air and returns it to the kitchen

8. Proper ventilation can do all of the following except:
A. Reduce airborne volatile organic compounds, B. Help control insect and rodent populations, C. Control moisture, D. Remove offensive odors

9. What is the top cause of home injury or death?
A. Poisoning, B. Falls, C. Fires and burns, D. Choking and suffocation

10. Paper or wooden materials that come in contact with the interior foundation of a house can provide suitable conditions for:
A. Mold growth, B. Radon, C. Asbestos, D. Deteriorated lead-based paint

11. If the legislature revises the community's building code for single family homes, the changes typically apply to:
A. All housing, B. Housing built after code became effective, C. Only rental property, D. Maintenance work done on existing housing.

12. Identify the party responsible for ensuring that rental property is safe and healthy.
A. Landlord, B. Tenant, C. Health department, D. Housing code enforcement agency

13. Which of the following strategies is usually NOT included as part of an Integrated Pest Management strategy for dealing with cockroaches in the home?
A. Storing food in plastic containers, B. Reducing clutter, C. Spraying baseboards with a pesticide registered to kill cockroaches , D. Degreasing kitchen exhaust fans

14. Which is the most hazardous source of volatile organic compounds?
A. Cleaning products, B. Particle board or fiber board, C. Smoking , D. Deteriorated lead-based paint

15. Which one of the following statements about radon is true?
A. Radon has a distinct odor, B. Radon is the leading cause of lung cancer in the United States for non-smokers, C. Radon is not an issue for homes built after 1978, D. High levels of radon are found primarily in the Southeastern part of the United States.

16. Which one of the following statements about lead is true?
A. A child is most often poisoned by eating chips of lead-based paint., B. Intact lead-based paint must be removed to protect children from lead poisoning., C. Lead based paint was removed from the market in 1950., D. Children are often exposed to lead through hand-to-mouth activity.

17. Which of the following statements is true about hot water heaters?
A. All hot water heaters are a source of combustion products., B. Drain pans placed under hot water heaters can help control water damage from leaks., C. Hot water heaters will have condensate on them, D. All of the above.

18. When can a public health agency tell a landlord that a tenant has asthma?
A. When the landlord asks about it, B. When the tenant gives an OK over the phone, C. When a tenant signs a release form, D. Only when documented by a doctor

19. In a home built in 1930, when must a landlord disclose the results of testing for lead hazards to a tenant?

A. When the lease is signed, B. Only when the tenant asks, C. As soon as the landlord finds out, D. Never if the tenant did not live there when the test was done

20. Which of the following illnesses are associated with the presence of rats?
A. Stomach illness, B. Asthma exacerbation, C. Bites, especially on children, D. All of the above.

21. Carbon monoxide is most closely associated with which of the following?
A. Deteriorated lead-based paint, B. Moisture, C. Furnace, D. Oven with local exhaust

22 - 25 For each housing condition listed write the letter of the health conditions that are associated with them. There can be more than one health effect for each housing condition identified.
Health Effect: A. Lung cancer, B. Asthma exacerbation, C. Death, D. Lead poisoning

22. Dust in the window wells

23. Combustion Byproducts

24. Cockroaches

25. Mold

Attachment D – Online Survey

Essentials for Healthy Homes Practitioner Course
Post-Training Survey

Thank you for taking the *Essentials for Healthy Homes Practitioner* course. We would like to know how your participation in the course has impacted your work related to healthy housing. Please take a couple of minutes and complete the following evaluation form. If you have questions, contact Susan Aceti at 410-772-2780 or at saceti@nchh.org. We will get back to you if we have any questions.

As a thank you for your effort, NCHH will be glad to send you a copy of CDC's outstanding new Healthy Homes Reference manual in book form or on CD-ROM. Just complete the form below.

In addition, we will randomly select one submission received before August 31, 2006 and give the person a new moisture meter valued at $385.

Name

Affiliation

Address

City, State and Zip

Phone

E-Mail

Occupation: Environmental Health Professional

If other, describe:

Employer: Local Government

Other:

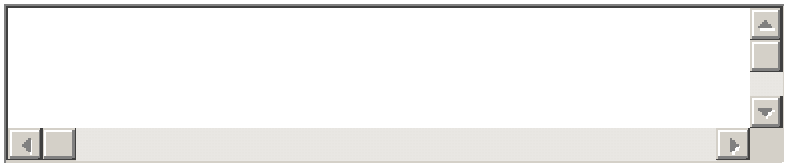
City Where Training Held

Don't remember

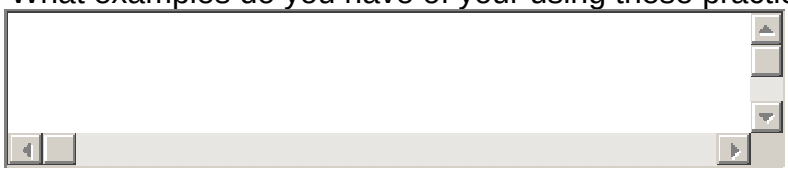
☐ Yes, I would like a copy of the CDC Reference Manual. Please identify the format you need. CD-ROM / Hard Copy Manual

☐ Yes, I want to be eligible for the drawing to receive the moisture meter.

1. What principles or aspects of the training have you used most in your every day practice?

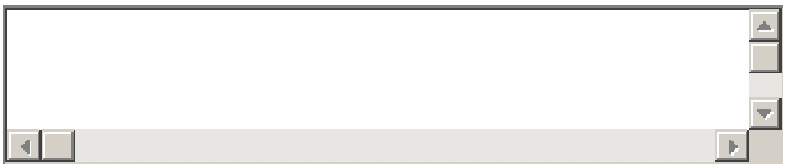


2. What examples do you have of your using these practices as part of your daily work?



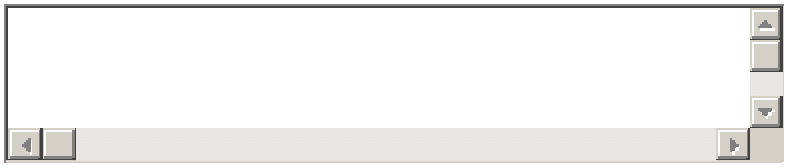
3. Has the training affected your (or your employer's) plans for new services, service enhancements, or changes in policy? If so how?

- ☐ No impact yet
- ☐ Yes. If yes, please check all that apply and add additional comments as necessary.
  - ☐ Coordination of home visits
  - ☐ Enhanced education efforts
  - ☐ Reducing agency duplication
  - ☐ Improving housing codes
  - ☐ Increasing code enforcement efforts
  - ☐ Other. Explain below.



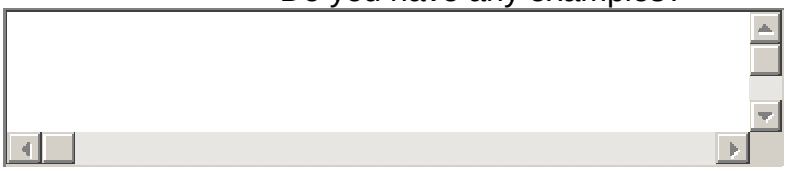
4. Have you encountered any barriers putting healthy homes information into practice?

- ☐ No
- ☐ Yes. If yes, please check all that apply and provide other comments as necessary.
  - ☐ Lack of time
  - ☐ No rules or codes to use
  - ☐ Insufficient funding
  - ☐ Unsure of how to put it into action
  - ☐ Inadequate management support
  - ☐ Other. Explain below
  - ☐ Limited resident interest
  - ☐ Need more training / information to implement practices



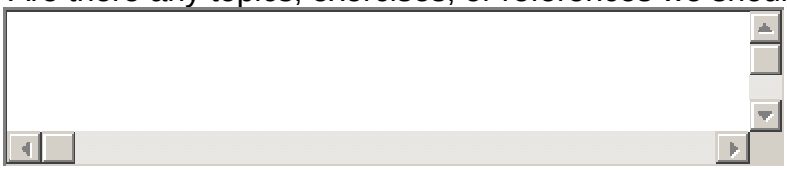
5. How much have your clients or constituents benefited from the knowledge and skills you gained through the training?

Significantly Do you have any examples?



6. Since taking the healthy homes training, how many of your clients would you estimate have benefited from the knowledge and skills you gained? 1 - 25

7. Are there any topics, exercises, or references we should add to the training?



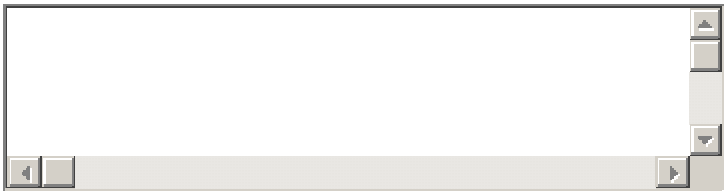
8. Would you like to take additional healthy homes courses? The following are courses currently being piloted. Please check those you would consider attending. If you have ideas for other courses, please click Other and write a short description.

- ☐ No
- ☐ Yes. If yes, please check all that apply.
  - ☐ Launching a Healthy Homes Program
  - ☐ Integrated Pest Management in Multi-Family Housing (description not available yet)
  - ☐ Lead-Safe & Healthy Homes Work Practices
  - ☐ Flood Clean-up (description not available yet)
  - ☐ Other

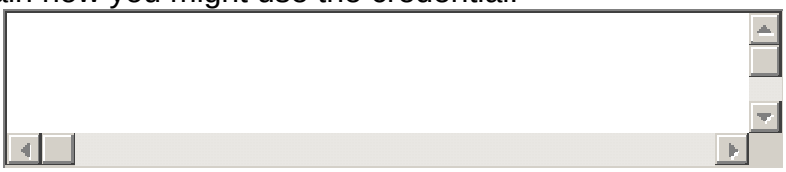
☐ Check this box if you would like us to contact you about these courses.

9. Do you have colleagues who would benefit from healthy homes training?

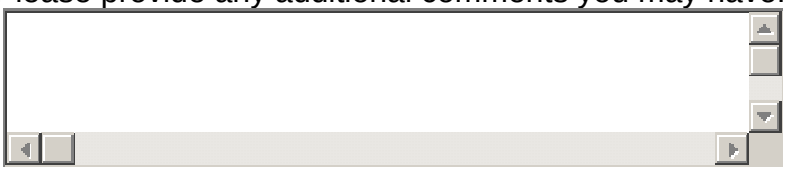
☐ Yes ☐ No If yes, please describe their job positions and why you think they would benefit.



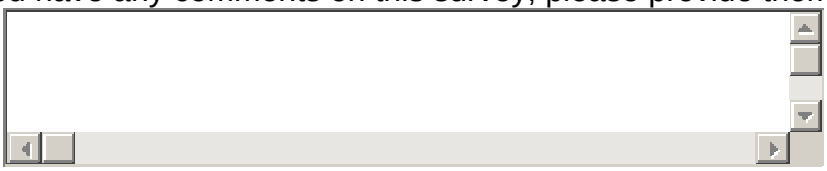
10. Would you be interested in getting a Healthy Homes Practitioner credential from the National Environmental Health Association? ☐ Yes ☐ No ☐ Don't Know If yes, explain how you might use the credential.



11. Please provide any additional comments you may have.



If you have any comments on this survey, please provide them below.



Thank you!

Submit Reset