

HEALTHY HOME ASSESSMENT PROCESS



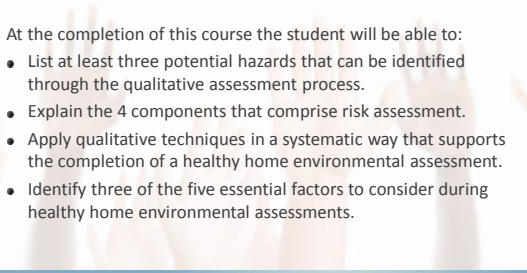


Healthy Housing Solutions^{INC.}

INSTRUCTIONAL OBJECTIVES

At the completion of this course the student will be able to:

- List at least three potential hazards that can be identified through the qualitative assessment process.
- Explain the 4 components that comprise risk assessment.
- Apply qualitative techniques in a systematic way that supports the completion of a healthy home environmental assessment.
- Identify three of the five essential factors to consider during healthy home environmental assessments.





www.healthyhousingsolutions.com/training

HEALTHY HOME ENVIRONMENTAL ASSESSMENT PRINCIPLES

Principles and concepts described herein should be common to all healthy home environmental assessments.

All healthy home assessments must include the core principles of healthy homes.




All healthy home assessments start with the occupants and the goal of maintaining and/or improving their health.



www.healthyhousingsolutions.com/training

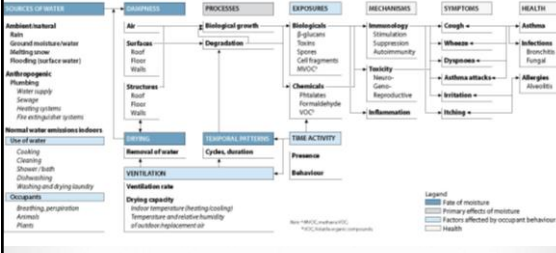
HEALTHY HOME ENVIRONMENTAL ASSESSMENT PRINCIPLES

- Initial contact and collection of information
- Establish a clear purpose for the assessment
- Formulate initial hypotheses
- Site visit and walk-through
- Qualitative and Quantitative Assessment
- Generate Assessment Report with Actions
- Educate for Solutions

www.healthyschools.gov/healthyhomes

PATHWAYS LINKING SOURCES OF DAMPNESS WITH HEALTH



From- WHO Guidelines for IAQ: Dampness & Mold, p.4-5, 2009

HOME ASSESSMENTS ARE INTENDED TO IDENTIFY HEALTH AND SAFETY RISKS

- Optimally, Assessments should:
 - Identify the nature and extent of individual hazards: Risk Assessment
 - Determine the relative risk of different hazards: Risk Analysis
 - Evaluate the interactions and synergisms between individual hazards: Risk Characterization

HUD Healthy Homes Issues: Residential Assessments, March 2006





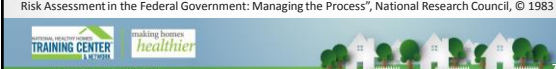
www.healthyschools.gov/healthyhomes

RISK ASSESSMENT

Risk Assessment is a systematic method of collecting and interpreting scientific information relating environmental hazards to human health.

Risk Assessment is a process of quantifying the likelihood of harmful effects from a hazard.

Risk Assessment in the Federal Government: Managing the Process, National Research Council, © 1983




HOME ASSESSMENTS ARE RISK ASSESSMENTS

Risk Assessment Steps*

- Hazard Identification
- Hazard Evaluation
- Dose-response assessment
- Exposure Assessment
- Risk Characterization

*National Research Council, 1983



RISK ASSESSMENTS INCLUDE RISK-BENEFIT ANALYSIS WITH THE GOAL:

to reduce exposure to hazard whenever possible

- Avoid sun exposure

to accept substantial hazard only for great benefit

- Flying versus driving


to accept minor hazard for modest benefit; and

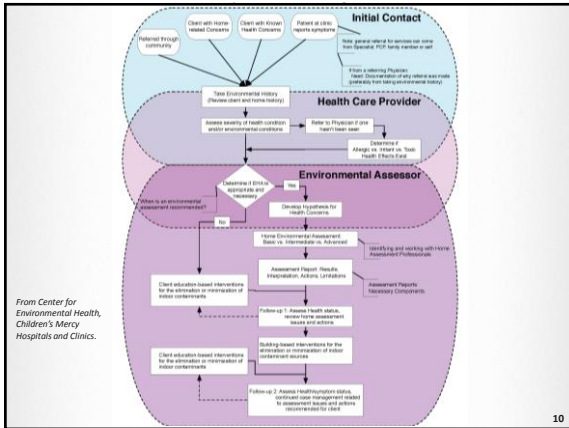
- Hair dyeing or coloring

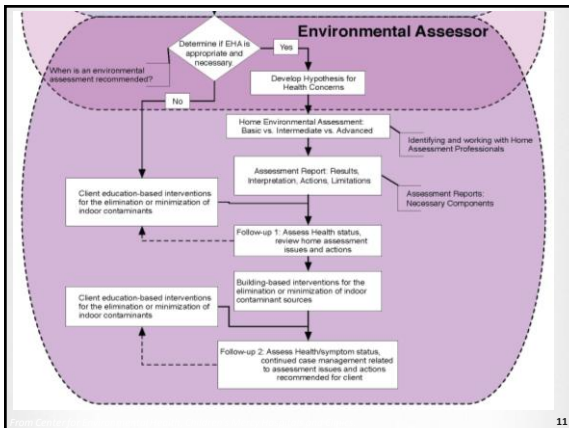
to accept no hazard at all when the benefit seems relatively trivial

- Tanning beds

Philip Handler (1979), President of U.S. National Academy of Sciences 1969 to 1981







FIVE ESSENTIAL FACTORS TO CONSIDER DURING HEALTHY HOME ENVIRONMENTAL ASSESSMENTS

- Health & Medical History of the Patient
- “One Touch” Comprehensive Approach
- Sources of Environmental Hazards
- Pathways of Exposure
- Recognize Building as “System”

Home Assessment Process Should Be:

Comprehensive and holistic

Systematic and objective

Provide documentation of all areas assessed

Rule out concerns by documenting what was observed, good and bad

TRAINING CENTER
making homes healthier

13

ERRATIC AGREEMENT BETWEEN OCCUPANT AND TRAINED ASSESSOR'S PERCEPTION

WHO discussion (page 9)-

- Occupants reported more dampness than the trained surveyors (Bornehag et al., 2001),
- Some studies showed that occupants reported less dampness (Williamson et al., 1997; Nevalainen et al., 1998).
- Other studies showed poor agreement between self-reported and inspectors' observations of dampness and moldy odor. (Engman, Bornehag and Sundell (2007) and Sun, Sundhell and Zhang (2007) .

From- WHO Guidelines for IAQ: Dampness & Mold, p.8, 2009

TRAINING CENTER
making homes healthier

14

WHAT ABOUT RENTAL PROPERTY?

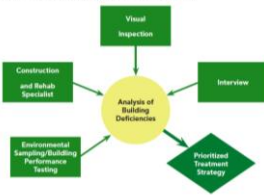
- Assessment allowed if non-destructive
- Family should provide report to Landlord
- Issues identified that are code violations may need to be reported to code enforcement

TRAINING CENTER
making homes healthier

15

HOME ASSESSMENTS ARE ONE COMPONENT IN ANALYZING HOUSING DEFICIENCIES

Figure 4.8 Assessing Building Deficiency and Outcome



Note: The Prioritized Treatment Strategy reflects the focus of your program (e.g., airfare, energy efficiency, injury prevention) as well as other factors such as identifying imminent health hazards and risks to occupants, resources, reimbursement costs, and their relation to housing code and level of deterioration.

From HUD Healthy Home Program Guidance Manual, Chapter 4 Health and Safety Hazard Assessment
<http://portal.hud.gov/hudportal/HUD?mode=droppage&id=HHGUIDANCEMANUAL>



PRIMARY HOUSING-RELATED HAZARDS

Home-related Contaminants:

- Asbestos & Vermiculite
- Below ground Contaminants
- Building Products/Materials Emissions
- CO & Other Combustion Emissions
- Environmental Tobacco Smoke (ETS)
- Garage Pollution Sources
- Lead
- Moisture (Mold & Other Biologicals)
- Ozone
- Pests
- Radon
- Wood Smoke Emissions

c. V. Magn | 20 |
0 kV 1200x Janice Haney Carr

PRIMARY HOUSING-RELATED HAZARDS

- Critical Building Systems
 - HVAC Equipment
 - Combustion Safety (Vented & Unvented)
 - Source Ventilation
 - Whole House Ventilation
 - Multifamily Ventilation
- Safety
 - Home Safety



HEALTHY HOUSING MANUALS

The image shows two manual covers side-by-side. The left cover is for the 'Healthy Housing Reference Manual' and features a photograph of a white house with a tree in front. The right cover is for the 'Healthy Housing Inspection Manual' and features a collage of photos showing people in various settings, including a family and a person inspecting a house. Both covers include the HUD logo and the 'making homes healthier' slogan.

A NEW GUIDE FOR HEALTHY HOME PROGRAM DEVELOPMENT AND OPERATIONS

<http://portal.hud.gov/hudportal/HUD?mode=dispage&id=HHGUIDANCEMANUAL>

The image shows the cover of 'The Healthy Homes Program Guidance Manual'. The cover features a small house with a stethoscope around it, symbolizing health and housing. The text on the cover includes 'The Healthy Homes Program', 'Guidance Manual', 'PRE-RELEASE DRAFT', and 'September 2011'. It also includes the HUD logo and the 'making homes healthier' slogan.

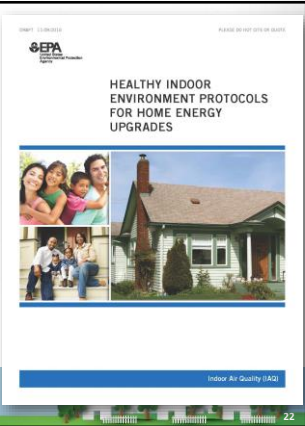
HEALTHY HOME RATING SYSTEM- A NEW HOUSING HAZARD ANALYSIS TOOL

The image shows the cover of 'Healthy Home Rating System - Operating Guidance'. The cover features a photograph of a modern building's interior structure with a glass ceiling. The text on the cover includes 'Operating Guidance', 'Healthy Home Rating System - Operating Guidance', and 'Department of Housing and Urban Development, Office of Healthy Homes and Lead Hazard Control'. It also includes the HUD logo and the 'making homes healthier' slogan.

New EPA Indoor Environmental Protocols for Energy Audits

Voluntary Guidelines Include:

- Protocols
- Minimum Actions
- Expanded Actions



NATIONAL HEALTH TRAINING CENTER | making homes healthier
 www.healthtrainingcenter.com/iaq

VISUAL ASSESSMENT TOOLS

- Allies Against Asthma
- ASTM D7297 IEQ Assessment
- CEHRC
- CMH EHA
- EPA Home Visit
- Harvard SPH
- HUD HHRS
- King County/Seattle
- NEETF/CHHNBU - PEHA

NATIONAL HEALTH TRAINING CENTER | making homes healthier
 www.healthtrainingcenter.com/iaq

ASSESS BOTH OBVIOUS AND NOT OBVIOUS INDOOR COMBUSTION SOURCES (CH₄, CO, NO₂, H₂O?)

- Gas Appliances and Water Heaters
- Gas Furnaces
- Gas/Fuel Space Heaters
- Candles and Incense

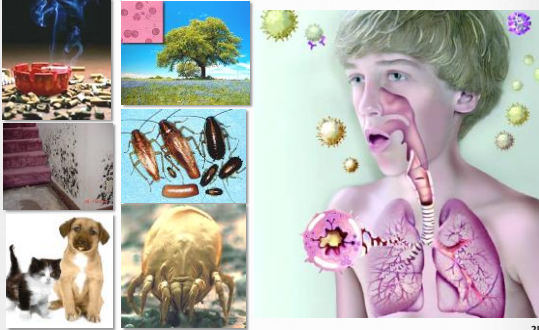


Photos courtesy of the Center for Environmental Health, Children's Mercy Hospital, © 2010.

NATIONAL HEALTH TRAINING CENTER | making homes healthier
 www.healthtrainingcenter.com/iaq

TOP ASTHMA TRIGGERS


REDUCING INDOOR ALLERGENS IMPROVES ASTHMA CONTROL



25

OTHER CONTAMINANTS TO CONSIDER


- Home-related Contaminants:
- High levels of Dust and Particulates
- Gases and off-gassing fumes
- Household chemicals
- Hobby chemicals and dusts
- Fragrances
- Sewer Gas
- Outdoor Pollutants and Fumes



26

HOME MAINTENANCE

- How are maintenance activities performed?
- What kinds of maintenance activities are performed by the occupants?
- What kinds of cleaning activities are performed?
 - Vacuuming (carpets, floors, bedding, upholstery, drapes?)
 - Sweeping
- How frequently does cleaning take place?



27

CHEMICAL USE & PRODUCT USED

- Cleaning liquids & sprays
- Soaps & Detergents
- Disinfectants
- Air Fresheners & Perfumes
- Pesticides
- Hobby Chemicals
- Glues
- Solvents
- Strippers
- Paints



ACUTE HAZARDS:

Hazards that require immediate attention due to the potential for posing an imminent danger to life and health for children.

Examples include: Imminent physical hazards: unsound stairs, child access to crawl spaces, roof collapse, structural deterioration or significant damage etc.,

Biological hazards: contamination from sewage leaks, standing water in basements, rotted flooring and major pest infestation, etc.

Chemical hazards: fire risks posed by improper storage of large quantities of chemicals, lead paint/dust hazards, detectable carbon monoxide and gas leaks, etc.

CHRONIC HAZARDS:

Hazards which do not pose an immediate danger to life and health to the occupants but do promote allergies, asthma, lead poisoning, pesticide exposure, or other chronic health conditions.

Examples include:

Physical: Poor HVAC maintenance, windows in dis-repair, foundation cracks, minor roof damage, plumbing leaks

Biological: Observed/reported pests, condensation and microbial growth, open cracks/gaps in siding, wet/damp drywall

Chemical: poorly operating stove, lack of ventilation/ exhaust fans in bathrooms and over gas stoves

HAZARD PRIORITY:

Identify what priority, if any, you the assessor would place on the issues or hazards observed:

Prioritize acute over chronic?

Lowest cost first?

Easiest to Address First?

Biggest health benefit, if known

Fastest Health Benefit, if obvious

For more discussion see, "Healthy Habitats", Carl Grimes, HHS, CIEC, © 2002, Building Press.



31

QUALITATIVE OR VISUAL ASSESSMENT

- Areas to Assess:
 - Exterior
 - Structural Components
 - Mechanical Components
 - Room by Room Visual Assessment
 - Floor Plan

Visual Survey Report

Assessor: _____
 Address: _____
 Date: _____

Visual Conducted by: _____
 Date: _____

Residence Type: _____
 (Select all that apply: Single-Family, Multi-Family, Mobile Home, etc.)

Check all that apply: Exterior Living Areas Kitchen Bathrooms Bedrooms Basements Attics Other

PROBLEM	Exterior	Living Areas	Kitchen	Bathrooms	Bedrooms	Basements	Attics	Other
Structural: Cracks, Rot, or Spill								
Water Damage with visible mold								
Interior moisture/mold								
Interior gas/water pipe leak								
Interior gas/water pipe/vent								
Mechanical equipment								
Other								
Other								
Other								
Other								

If existing residential lead-based paint information from lead test? Yes No
 Follow up visit scheduled for: Date: _____ Time: _____

Form from the Community Environmental Health Resource Center (CEHRC). <http://www.cehrc.org>



32

HOME ASSESSMENT PROCESS

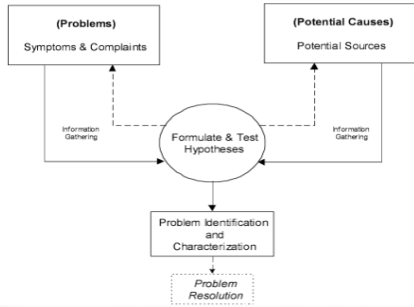
Where should a home assessment start?

- Outside?
- Living Room?
- Basement?
- Child bedroom?



33

INVESTIGATIONS ARE AN ITERATIVE PROCESS



From: ASTM-7297-Indoor Air Quality Assessment, American Society of Testing and Measurement (ASTM) 34

VISUAL ASSESSMENT

- Mechanical Components:
 - ◆ Furnace/AC
 - ◆ Window AC
 - ◆ Water Heater
 - ◆ Main Plumbing
 - ◆ Kitchen Plumbing
 - ◆ Bathroom Plumbing

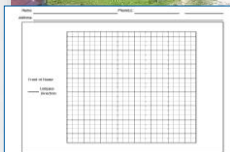


35

SITE & BUILDING ASSESSMENT




What are we looking for ?
What are we asking ?



Photos presented here courtesy of the Center for Environmental Health, Children's Mercy Hospital, © 2010.

36

BUILDING ASSESSMENT



What are we looking at?

General Conditions of:

- Roof and Penetrations
- Ventilation
- Flashing
- Eaves
- Siding
- Windows
- Doors
- Trim
- Chimney

Pay close attention to connecting points

37

WHAT ARE WE LOOKING FOR?

- Signs of deterioration
- Evidence of chronic issues
- Evidence of moisture intrusion
- Evidence of pest infestation
- Evidence of air/gas infiltration




Photos © 2010 Children's Mercy Hospital

38

WHAT ARE WE ASKING?

- Are some rooms colder than others?
- Have you seen any rats or mice around the outside or inside of your home?
- Have you had any plumbing problems?
- Other examples?



Photos © 2010 Children's Mercy Hospital

39

Visually assess all supply and waste water systems

Home Plumbing	Supply			Waste			Issues observed?	Acute Check
	Yes	No	NA	Yes	No	NA		
Main								
Kitchen Sink								
Tub/Shower								
Bathrooms								
Basin								
Other								

Photos © 2010 Children's Mercy Hospital

MECHANICAL SYSTEMS, LIMITED ASSESSMENT

Photos © 2010 Children's Mercy Hospital

WHAT ARE WE LOOKING FOR?

- Visual evidence of damage
- Evidence of moisture issues
- General condition of exhaust vents
 - Check for negative flow
- Are they connected?
- Furnaces, boilers, fireplaces vented
 - Check both ends if possible

Photos © 2010 Children's Mercy Hospital

HOME APPLIANCES, LIMITED ASSESSMENT




Photos © 2010 Children's Mercy Hospital

TRAINING CENTER
making homes healthier

www.childrensmercyhospital.com/healthyhomes

WHAT ARE WE LOOKING FOR AND ASKING?

- Bath, dryer, and range exhaust fans?
 - Do they work?
 - Are they used?
 - Exhaust to outside?
- Gas stove used as heater?
- Smoke alarm ever go off?
- CO Monitor present and working?
 - Ever go off?
- Do they bake or cook for long periods?



TRAINING CENTER
making homes healthier

Photo © 2010 Children's Mercy Hospital

ROOM BY ROOM ASSESSMENT

3.0 EHA Room Survey - Bedroom	Occupant	Date of this visit	Is this a Health-Starts Home?	Yes	No
Key Questions to Ask the Client:	Yes	No	Healthy Home Issues to Cleanse & Assess	None	Other
Healthy & Clean	Yes	No	Healthy Home Issues to Cleanse & Assess	None	Other
Healthy & Heat-Free	Yes	No	Healthy Home Issues to Cleanse & Assess	None	Other
Healthy & Dry	Yes	No	Healthy Home Issues to Cleanse & Assess	None	Other
Healthy & Comfortable Floor	Yes	No	Healthy Home Issues to Cleanse & Assess	None	Other
Healthy & Safe	Yes	No	Healthy Home Issues to Cleanse & Assess	None	Other
Grand Children (if you are)					
Notes & Comments					
Total Hazards Identified					None

TRAINING CENTER
making homes healthier

www.childrensmercyhospital.com/healthyhomes
