

Health Begins at Home

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Housing Conditions Have an Important Impact on Public Health



Most people spend an average of 50% or more of every day inside their homes



“The connection between health and the dwelling of the population is one of the _{most} important that exists”.

Florence Nightingale



Cited in Lowry, S. BMJ, 1991, 303, 838-840

More Than 6 Million Substandard Housing Units Nationwide

- ❑ Residents at increased risk for exposure to lead, carbon monoxide, mold, cockroaches, dust mites, pesticide residues, tobacco smoke, combustion gases, and radon, rat bites, and falls



More Than 6 Million Substandard Housing Units Nationwide

- ❑ Children in these units are more likely to have elevated blood lead levels and to have ever been diagnosed with asthma
- ❑ Children, the elderly, African Americans, American Indians, and the poorest Americans are at greatest risk for fire-related injuries and deaths



Substandard Housing Units (continued)

- ❑ Critical need to prevent the public health problems that stem from these units
- ❑ Healthy People 2020 goal calls for a ~ 20% reduction in housing with moderate or severe physical problems



Improving Safety in the Home

INJURY

18,000 unintentional injury deaths/year occur in the home

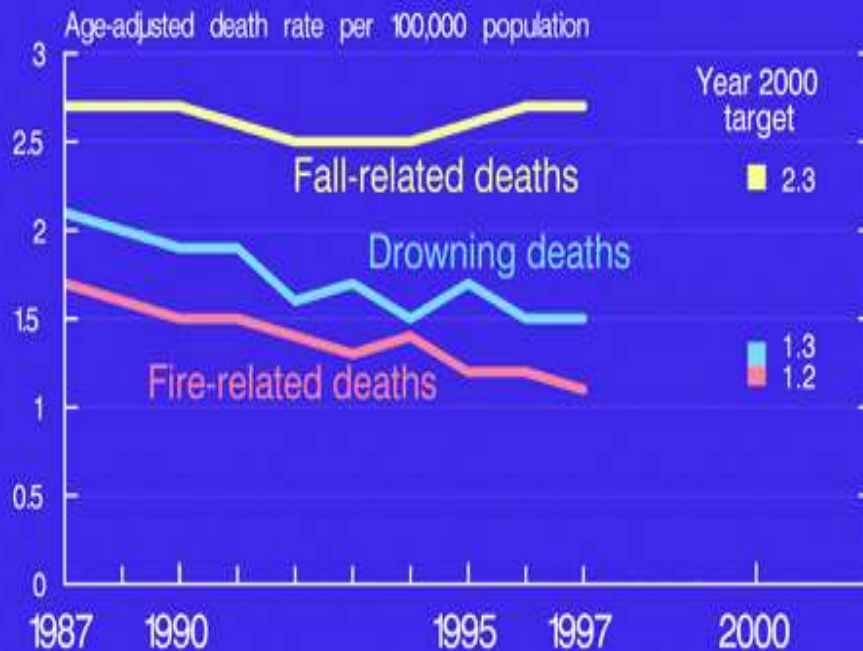
FIRES

~400,000 residential fires/year result in ~ \$7 billion in property damage, 3,000 deaths, and 14,000 injuries

PREPAREDNESS

Only 43% of households on the Atlantic Ocean or Gulf coast believe they are vulnerable to hurricanes.

Home and Leisure Deaths



SOURCE: CDC/NCHS, National Vital Statistics System, 1987-97

Addressing Environmental Features that Affect Health

CHEMICAL CONTAMINANTS-

47% of households in the US with children under 5 years old had a pesticide stored in an unlocked cabinet within reach of a child



Each year, more than 500 people in the US die from accidental CO poisoning.



1.2 million housing units with lead-based paint house low-income families with children.

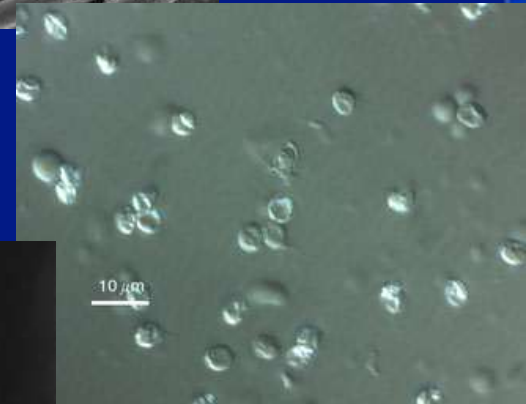
Addressing Biological Contaminates that Affect Health

In 1999 and 2000, 43% of all drinking water disease outbreaks were associated with small, unregulated community water systems and private wells. 45 million people in the US use unregulated water.



Escherichia
Coli

Pseudomonas



Giardia

Addressing Housing Characteristics that Affect Health

Inadequate Ventilation

Radon, found in indoor air, causes ~ 21,000 cases of lung cancer/ year

Secondhand Smoke

More than 13 million children are exposed to tobacco smoke at home.

Dampness

Mold and moisture aggravates pre-existing respiratory conditions such as asthma



Pests

Rodents transmit disease directly and can also be the source of allergens that exacerbate asthma



Health Care and Productivity Costs for Illnesses and Injuries

- ❑ **Asthma: \$18.3 billion a year**
- ❑ **Burns: \$7.5 billion a year**
- ❑ **Childhood Lead Poisoning: \$2,552 for each 1 $\mu\text{g}/\text{dL}$ increase in blood lead level**
- ❑ **Falls (in 2000): \$81 billion in lifetime costs**
- ❑ **Depression: \$83.1 billion in lifetime costs**



The Surgeon General's
Call To Action On Healthy Homes

2009



U.S. Department of Health and Human Services

The *Call to Action* describes the steps people can take now to protect themselves from disease, disability, and injury that may result from health hazards in their homes.

1. Take actions to ensure that all Americans have access to healthy, safe, and affordable housing

Housing design and construction can hamper ease of mobility within a home and interfere with reasonable access to important features of the house, such as toilets and shelving in cupboards and closets for elders and people with disability.

17 million U.S. families spend more than 50% of their income on housing and may not be able to purchase health care, medicines or adequate food.

Living in neighborhoods with concentrated poverty level increases emotional stress and exposure to intentional injury.



2. Increase public awareness by creating a national dialogue on healthy housing and by promoting health literacy about housing

A national dialogue will improve the public's understanding of the relationship between housing and health.

Increasing health literacy should be done in many contexts and settings, from family members and academics to the many professionals and individual stakeholders involved in the housing industry.

Greater knowledge about key health issues will give people the capacity to make informed, evidence-based, and compassionate housing decisions.



3. Invest in research that increases our understanding of the long-term economic benefits of healthy housing



Identify additional housing factors that can promote and protect people's health, develop an understanding of the causal sequences of events leading to specific injuries and describe the physiologic pathway that links the housing environment and mental health.

Further research is needed to determine the relative benefits and costs of modern construction practices such as increasing stair width, increasing traction on floor surfaces, improving home lighting, and installing handrails.

In addition, the potential for cost savings and other benefits that result in improvements in both residents' health and cost-savings through energy conservation should also be investigated.

Sufficient Evidence



Interior Biological Agents

Multifaceted tailored asthma interventions
Integrated pest management (allergen reduction)
Moisture intrusion elimination

Drinking Water & Waste Treatment

Voluntary drinking & wastewater treatment standards for small systems & private wells
Training for small system personnel
Guidelines for immunocompromised individuals

Community-level Housing Interventions

Rental vouchers (Housing Choice Voucher Program)

Interior Chemical Agents

Radon air mitigation through active subslab depressurization
Integrated pest management (pesticide reduction)
Smoking bans
Lead hazard control

Structural Deficiencies

Installation of working smoke/CO alarms
Isolation 4-sided pool fencing
Preset safe temperature hot water heaters
Air condition during heat waves

Needs More Field Evaluation

Interior Biological Agents

Dehumidification
General & local exhaust ventilation (kitchens & baths)
Air cleaners (to reduce asthma)
Dry steam cleaning
Vacuuming

Interior Chemical Agents

Radon mitigation in drinking water
Portable HEPA air cleaners to reduce particulate
Attached garage sealing to limit VOC intrusion
Particulate control by envelope sealing

Structural Deficiencies

Home safety education on stair gates, window locks and window guards, and match & lighter storage with cabinet locks
Fall prevention by handrails, grab bars, and improved lighting

Drinking and Waste Water Treatment

UV and other filtration point of use systems
DNA to track pathogen sources
Location of privies and failed drinking water and wastewater systems

4. Translate Healthy Homes Research into Practice and Policy

- Develop and implement mechanisms for updating recommendations and communicating them to housing agencies and professionals involved in constructing and maintaining homes.
- Develop and implement mechanisms to accelerate the transfer of research findings into home-based health care and social services, housing programs, and other service delivery systems.
- Use evidence-based interventions to develop or support a program to certify houses and homes-related consumer products as healthy and safe.
- Communicate the research findings.

CDC's Healthy Homes Program



CDC's Healthy Homes Program is a coordinated, comprehensive, and holistic approach to preventing diseases and injuries that result from housing-related hazards and deficiencies.

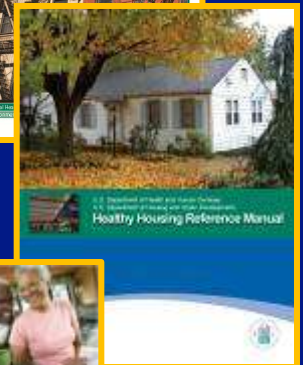
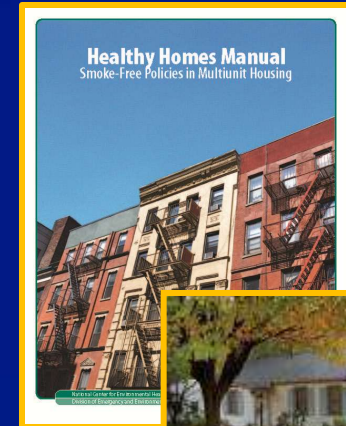
CDC's Healthy Homes Program

- ❑ **Vision:** All people are healthier because they live in healthy homes
- ❑ **Mission:** Homes are healthier because CDC advances knowledge, and ensures that the resources, partnerships, programs, and policies necessary to create and sustain healthy homes.

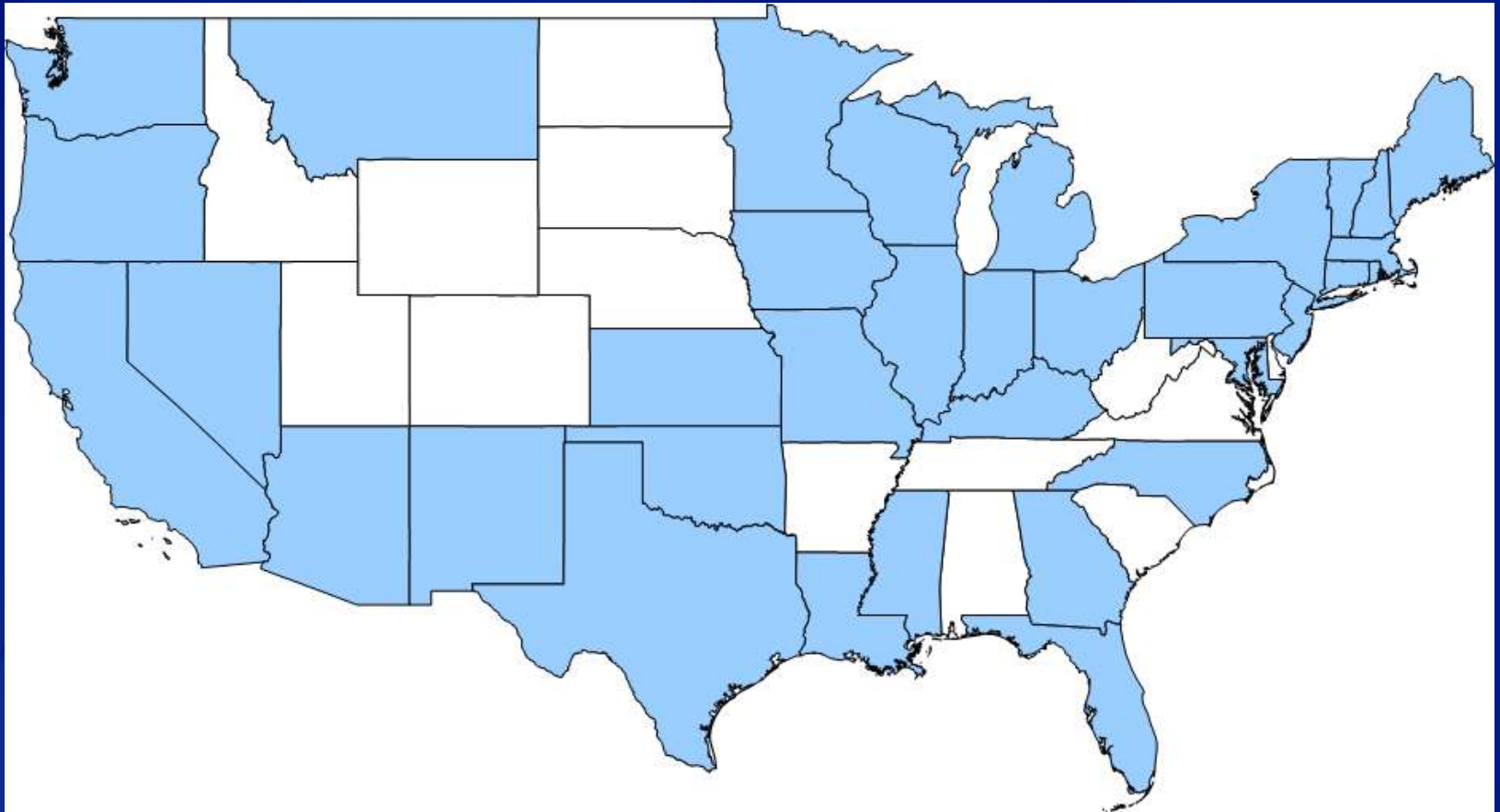


Healthy Homes Program Activities

- ❑ Funding State Health Departments
- ❑ Developing Guidance Documents
- ❑ Providing Training
- ❑ Improving Surveillance
- ❑ Conducting Research



New Healthy Homes Funded States





www.cdc.gov/healthyhomes

Healthy Homes Manual

Smoke-Free Policies in Multiunit Housing



National Center for Environmental Health
Division of Emergency and Environmental Health Services



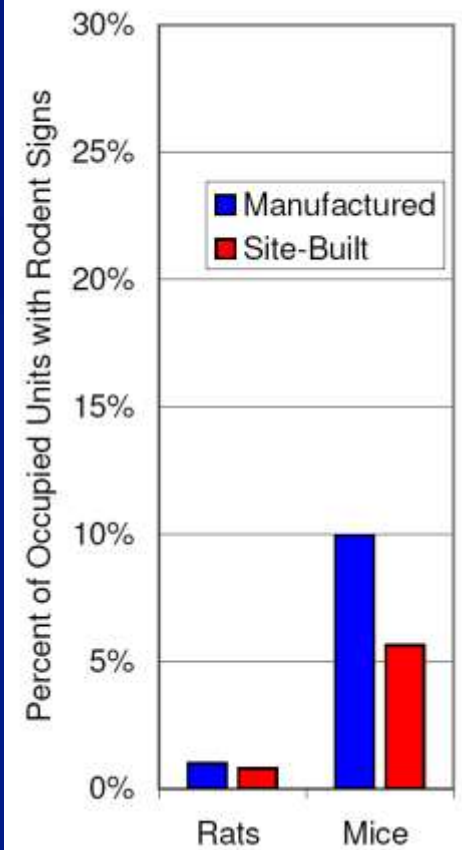
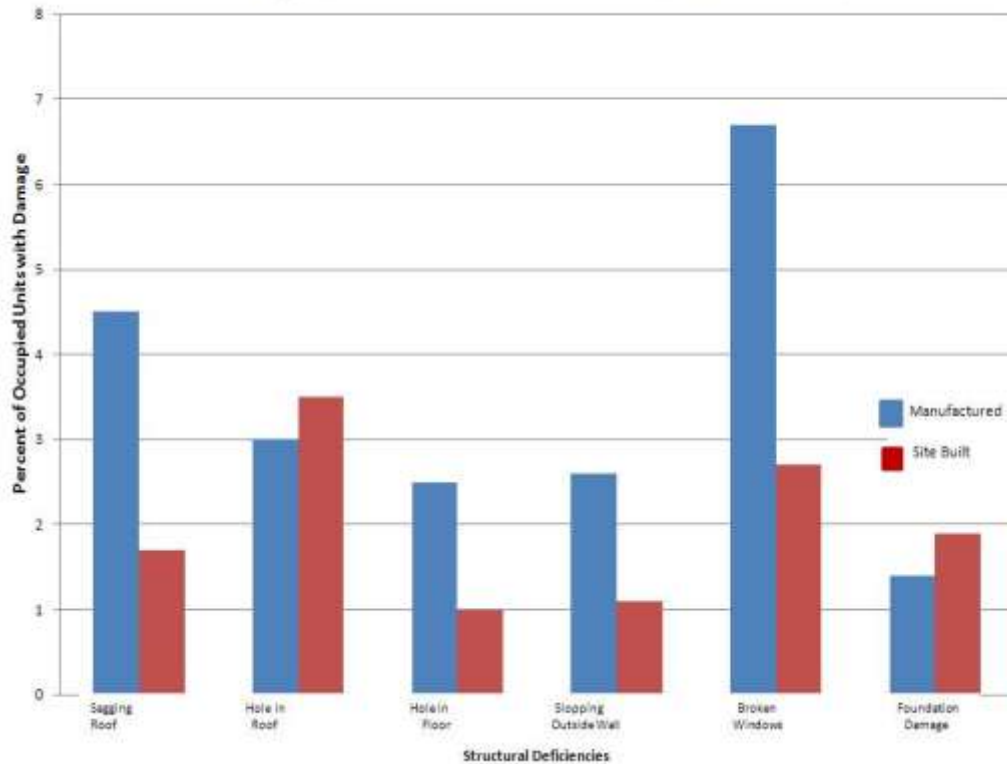


U.S. Department of Health and Human Services
U.S. Department of Housing and Urban Development

Safety and Health in Manufactured Structures



Comparison of Manufactured and Site Built Homes



In 2002, an estimated 17,200 structure fires in manufactured housing occurred in the United States, causing 210 deaths and \$134 million in direct property damage.

The confined spaces of manufactured structures, and in some cases lower ventilation and air exchange rates, make indoor air quality a concern in manufactured structures

New Healthy Homes DVD



Healthy Homes & Lead Poisoning Surveillance System (HHPSS)

- Web Based – state and locals access same database
- Virtually unlimited capacity
- Address verification and geo-coding
- Improved/faster reporting
- Improved more detail methods for tracking non-paint sources
- More drop down list with fewer free text fields
- Ability to import HL7 ELRs
- Ability to track healthy housing variables

HHL PSS Timeline

- Developed in-house by Emergint Technologies Inc
- Beta testing was completed from September 2009 through January 2010
- Deployment to 18 state and local health departments
- Currently being tested with production expected over the next 2 months.

Green Housing Study

Optimized heating, ventilation
and air conditioning (HVAC) system

Recycled
building materials

Energy efficient
appliances



Low/ no volatile organic
compound (VOC) carpets and
paint

Integrated Pest
Management

Improved Insulation

Objective:

To quantify levels of mold, allergens, pesticides and volatile organic compounds (VOCs) in Green and conventional housing.

Study Design:

Longitudinal, multiple assessments

Locations:

13 cities across the country
(n = 64 homes in each city)



Thank you!

**For More Information:
Healthy Homes and Lead Poisoning Prevention Branch
770-488-3300**

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

National Center for Environmental Health
Healthy Homes and Lead Poisoning Prevention Branch

