

# Executive Summary

# Advancing

# Healthy Housing

## A STRATEGY FOR ACTION



# 2013

A Report from the Federal  
Healthy Homes Work Group

# Table of Contents

|                                                                                                                                        |    |
|----------------------------------------------------------------------------------------------------------------------------------------|----|
| Abbreviations                                                                                                                          | 3  |
| Executive Summary                                                                                                                      | 4  |
| Introduction                                                                                                                           | 8  |
| Advancing Healthy Housing - Goals                                                                                                      | 16 |
| <b>Goal 1</b> Establish Healthy Homes Recommendations                                                                                  | 17 |
| 1.1 – Establish Recommendations for Assessing Health and Safety Hazards                                                                | 17 |
| <b>Goal 2</b> Encourage Adoption of Healthy Homes Recommendations                                                                      | 19 |
| 2.1 – Obtain Commitments from Agencies to Advance Healthy Housing                                                                      | 19 |
| 2.2 – Strengthen Federal Efforts to Reduce Public Health Risks in Housing                                                              | 20 |
| 2.3 – Explore Ways to Leverage Funding across Federal and Non-Federal Programs                                                         | 21 |
| <b>Goal 3</b> Create and Support Training and Workforce Development to Address Health Hazards in Housing                               | 22 |
| 3.1 – Support Enhanced Healthy Homes Training and Workforce Development                                                                | 22 |
| 3.2 – Accelerate Replication of Successful Local Healthy Housing Programs                                                              | 23 |
| 3.3 – Encourage Pilots or Demonstration Programs that Advance Healthy Housing                                                          | 23 |
| <b>Goal 4</b> Educate the Public about Healthy Homes                                                                                   | 24 |
| 4.1 – Develop a Communications Strategy on Healthy Homes                                                                               | 24 |
| 4.2 – Increase Public Awareness of the Healthy Homes Model                                                                             | 25 |
| <b>Goal 5</b> Support Research that Informs and Advances Healthy Housing in a Cost-Effective Manner                                    | 27 |
| 5.1 – Develop an Interagency Strategic Research Agenda                                                                                 | 27 |
| 5.2 – Support the Development and Implementation of National Surveys to Collect Surveillance Data on Critical Healthy Homes Indicators | 28 |
| 5.3 – Support Program Evaluation to Continue Identifying Cost-Effective Healthy Homes Practices                                        | 29 |
| Conclusion                                                                                                                             | 30 |
| Appendix A: Healthy Homes Illustration                                                                                                 | 31 |
| Appendix B: Selected Agency-Specific Healthy Homes Activities                                                                          | 34 |
| Appendix C: Healthy Home Rating System                                                                                                 | 37 |
| Appendix D: Relevant Objectives from Healthy People 2020                                                                               | 40 |
| Appendix E: Goals and Priority Actions Table                                                                                           | 41 |
| Healthy Homes Strategy for Action Priority Actions and Key Agencies Involved                                                           | 42 |
| ENDNOTES                                                                                                                               | 44 |

# Abbreviations

|            |                                                                           |
|------------|---------------------------------------------------------------------------|
| AMI        | Area Median Income                                                        |
| APHA       | American Public Health Association                                        |
| CDC        | U.S. Centers for Disease Control and Prevention                           |
| CO         | Carbon Monoxide                                                           |
| DOE        | U.S. Department of Energy                                                 |
| DOL        | U.S. Department of Labor                                                  |
| EPA        | U.S. Environmental Protection Agency                                      |
| HEPA       | High Efficiency Particulate Air                                           |
| HHS        | U.S. Department of Health and Human Services                              |
| HUD        | U.S. Department of Housing and Urban Development                          |
| HHWG       | Healthy Homes Work Group                                                  |
| IAA        | Interagency Agreement                                                     |
| IPM        | Integrated Pest Management                                                |
| KPI        | Key Performance Indicator                                                 |
| NHANES     | National Health and Nutrition Examination Survey                          |
| NIEHS      | National Institute of Environmental Health Sciences                       |
| NIFA       | National Institute of Food and Agriculture                                |
| NIST       | National Institute of Standards and Technology                            |
| OSHA       | Occupational Safety and Health Administration                             |
| RHS        | Rural Housing Service (U.S. Department of Agriculture)                    |
| SIRG       | State Indoor Radon Grant                                                  |
| USDA       | U.S. Department of Agriculture                                            |
| USDA CES   | USDA Cooperative Extension System                                         |
| USGBC LEED | U.S. Green Building Council Leadership in Energy and Environmental Design |
| VOC        | Volatile Organic Compound                                                 |



# Executive Summary

A home has a unique place in our everyday lives. Homes are where we start and end our day, where our children live and play, where friends and family gather to celebrate, and where we seek refuge and safety. In the *United States Housing Act of 1937*, Congress established as the policy of the United States to “*remedy the unsafe and insanitary housing conditions and the acute shortage of decent, safe, and sanitary dwellings for families of low income, in rural or urban communities, that are injurious to the health, safety, and morals of the citizens of the Nation.*”<sup>1</sup>

This document – *Advancing Healthy Housing – A Strategy for Action* (referred to as *Strategy for Action* or *Strategy*) – outlines goals and priorities in healthy housing for the next three to five years based upon the consensus opinion of the federal interagency Healthy Homes Work Group (HHWG). The HHWG includes the Department of Housing and Urban Development (HUD), organizations within the Department of Health and Human Services (HHS) including the Centers for Disease Control and Prevention (CDC) and the National Institute of Environmental Health Sciences (NIEHS), the Department of Agriculture (USDA), the Environmental Protection Agency (EPA), the Department of Energy (DOE), the Department of Labor (DOL), and the National Institute of Standards and Technology (NIST). The final development of the *Strategy* occurred under the auspices of the President’s Task Force on Environmental Health Risks and Safety Risks to Children (the Task Force), which has the objectives to identify priority issues that can be best addressed through interagency efforts and to recommend and implement interagency actions. The initiatives encompassed in this *Strategy for Action* will capitalize on the collective expertise within the HHWG and the Task Force to advance the policy established in the *United States Housing Act*: “...to assist States and political subdivisions of States to remedy the unsafe housing conditions and the acute shortage of decent and safe dwellings for low-income families [and] to assist States and political subdivision of States to address the shortage of housing affordable to low-income families.”<sup>2</sup> Whether in new or existing

initiatives, the Task Force recognizes that all actions will be subject to the annual budget processes that require balancing priorities within available resources.

## The Need for Healthy Housing

People in the United States spend about 70% of their time in a residence<sup>3</sup>, suggesting that the condition of the home is a factor in a person’s well-being. Poor housing conditions, such as a dilapidated structure; roofing problems; heating, plumbing, and electrical deficiencies; water leaks and intrusion; pests; damaged paint; and radon gas are associated with a wide range of health conditions, including unintentional injuries, respiratory illness, asthma, lead poisoning, and cancer, respectively.<sup>4</sup> The HHWG believes that no housing program can be considered successful unless the residents it serves live in homes that are healthy and safe.

While unhealthy and inadequate housing continue to affect the health of millions of people from all income levels, geographic areas, and walks of life in the United States<sup>5</sup>, in some situations, susceptible and vulnerable populations, such as children, the poor, minorities, individuals with behavioral health issues, and people with chronic medical conditions, may be disproportionately impacted by inadequate housing.<sup>6,7,8</sup> Currently in the United States, millions of homes have moderate to severe physical housing problems.<sup>9,10</sup>

Although the health risks associated with homes are many and varied, the household hazards that contribute to those risks tend to be interrelated. For example, some research has suggested that excess moisture, poor indoor air quality, and high levels of contaminated dust are common root causes for residential health hazards.<sup>11</sup> The HHWG believes that additional research is needed to determine whether addressing these deficiencies concurrently, rather than attempting to tackle each hazard individually, would yield the greatest results in the most efficient, cost-effective manner.<sup>12,13</sup>

## The Potential Cost Burden of Unhealthy Housing

Homes with risks like radon, lead, or other unsafe conditions can have a physical toll on their inhabitants, while also imposing a considerable economical burden in a larger societal context. A number of peer-reviewed studies have been published on the economic burden of specific hazards in at-risk homes, and each study reported costs into the billions of dollars on an annual basis.<sup>14,15,16,17,18</sup> For example, one study estimated that the costs for asthma due to one root cause in the home - dampness and mold - were estimated at several billions of dollars in 2004,<sup>19</sup> while an even higher cost burden was attributed to unintentional injuries in the home in another study.<sup>20</sup> Until we can conduct further research, we will not know the total fraction of all health-care costs attributable exclusively to hazards in the home environment and how they may relate to one another; however, current findings suggest hazards associated with the home contribute to both the health and economic burdens of society.

In addition to an evolving understanding on the health outcomes and costs associated with hazards in the home, additional information is beginning to surface on the effectiveness of intervention programs. Current findings suggest that these home-based hazards are preventable, and opportunities exist for intervention programs that would not only reduce health impacts on occupants, but the economic burden as well, resulting in a positive return on investment. Reported findings demonstrate intervention programs on lead poisoning prevention, reducing asthma triggers in the home, and the installation of smoke alarms, for example, are effective at producing a strong return for every dollar invested.<sup>21,22,23</sup> In addition, preliminary research suggests that interventions to prevent childhood residential injuries also have the potential to generate medical cost savings.<sup>24</sup>

For many of these problems, straightforward fixes may be available. For others, there is a need for increased research to inform policies and practices that minimize adverse health outcomes for those at greatest risk, including young children, immunocompromised individuals and older Americans. With additional research, the HHWG hopes to support healthy housing

for all people living in the United States regardless of age, race, ethnicity, income level, or geography. The case study example provided in Appendix A demonstrates the comprehensive scope of healthy home deficiencies that may be encountered, possible remedial actions that can be adopted to improve conditions, and the impact of those actions on the health and safety of the affected family.

## The Intention

This *Strategy* provides an initial framework to coordinate federal action for advancing healthy housing through a comprehensive approach. With additional research, the goal is to craft a “healthy homes model” that aims to implement the United States Housing Act goal: “...that our Nation should promote the goal of providing decent and affordable housing for all citizens through the efforts and encouragement of Federal, State, and local governments, and by the independent and collective actions of private citizens, organizations, and the private sector.”<sup>25</sup>

The *Strategy* is being published to focus attention on the public health impact of housing and to further the national dialogue on how we can promote healthy homes in the United States.

The *Strategy* urges a dynamic and coordinated effort to improve housing factors that affect health and outlines a series of mutually supportive coordinated actions that may accomplish the vision of achieving substantial reductions in the number of American homes with residential health and safety hazards. It encourages federal agencies to be proactive and to consider taking the first steps in implementing the priority actions. The *Strategy* also invites and encourages participation from many sectors to join in the discussion about healthy homes issues; to make informed, shared, and compassionate decisions; and to develop imaginative and realistic solutions that will help ensure that safe, healthy, affordable, and accessible homes are available to everyone in the United States.

And finally, the *Strategy* advances the healthy homes model by promoting a consensus-based conceptual model of healthy housing focused on supporting the health of its residents. As Kathleen Sebelius, Secretary of Department of Health and Human Services, has

stated: "...I urge all Americans to embrace the holistic approach to creating healthy homes described in the *Surgeon General's Call to Action to Promote Healthy Homes*."<sup>26</sup>

## Concept of a Healthy Home

***"A healthy home is sited, designed, built, maintained, and renovated in ways that support the health of its residents."***<sup>27</sup>

– U.S. Surgeon General, 2009

The concept of a healthy home has evolved over decades, beginning with the American Public Health Association's (APHA) seminal 1938 work, "Basic Principles of Healthful Housing,"<sup>28</sup> and continuing with the CDC's Basic Housing Inspection Manual in 1976, which was updated by the publication of the "Healthy Housing Reference Manual" by CDC and HUD in 2006.<sup>29</sup> The *Strategy* will continue the precedent set by those efforts and build upon "The Surgeon General's Call to Action to Promote Healthy Homes" that was published in 2009<sup>30</sup> to promote the concept of a healthy home.

Identifying the specific elements of a healthy home is still an evolving process, and the characteristics listed below are not intended to be exhaustive; however, the federal Healthy Homes Work Group believes that in the vast majority of cases, homes that meet the following characteristics can provide a safe and healthy environment for residents:

- DRY
- CLEAN
- PEST FREE
- SAFE
- CONTAMINANT FREE
- WELL VENTILATED
- WELL MAINTAINED
- THERMALLY CONTROLLED

These characteristics may be impacted by a wide range of factors, including the design, construction, maintenance, age, and overall condition of the building as well as the actions and behaviors of the home's occupants.

## Federal Agency Collaboration

Being able to coordinate federal programs in a comprehensive and strategic fashion is vital to implementing the *Strategy*.

Agencies across the federal government have embraced the healthy housing model to promote safe, decent, and sanitary housing as a means that may prevent diseases and injury (See Appendix B for a listing of agency-specific activities). In addition, agencies have collaborated on a number of interagency healthy homes initiatives. Cooperative work through interagency agreements (IAAs) with federal agencies have also resulted in important program achievements, such as outreach and training initiatives through the USDA's National Institute of Food and Agriculture (NIFA) and Rural Housing Service (RHS) and the federal radon action plan<sup>31</sup>. Interagency collaboration culminated in the planning and delivery of two federal Healthy Homes Conferences, the first held in September 2008 and the second in June 2011, both sponsored by HUD, CDC, EPA, and USDA. These conferences served as an incubator for the exchange of ideas, and helped to focus national attention on the importance of safe, healthy, efficient, and affordable homes for America's families.

## Emergence of the Federal Healthy Homes Work Group

Although staff from the various agencies have successfully worked together informally to link and collaborate on their individual programs, a formal structure or organization connecting healthy homes activities was lacking. In response, federal partners with a core interest in healthy homes joined forces in 2009 to form the federal Healthy Homes Work Group (HHWG).<sup>32</sup> The primary goal of the HHWG is to promote nationwide access to safe and healthy homes. The HHWG works to influence existing programs, and to identify new opportunities and ensure that programs are operating effectively and efficiently. It also links program activities to the broader mission of each individual agency and encourages the integration of the healthy homes model into federal programs.

## Need for a Federal Strategy for Action on Healthy Housing

With limitations on individual agency resources, it is imperative that the federal partners of the HHWG leverage their resources and expertise to implement a national healthy homes agenda.

The HHWG challenged itself to:

- Establish a comprehensive federal strategy to promote healthy homes;
- Promote comprehensive approaches to controlling and preventing major housing-related exposures and hazards;
- Identify and find ways to eliminate barriers that impede collaboration and that complicate assisting those in need of federal technical assistance and/ or funding; and
- Collaborate with key federal and non-federal stakeholders to implement a healthy homes implementation agenda at the community level.

This *Strategy* outlines the goals and priorities in healthy housing for the HHWG during the next three to five years. It is a first step in organizing the work of the federal agencies committed to making healthy homes available to all Americans, thus serving both as a roadmap for coordinated activities and as a visible statement of the agencies' commitments to carry out specific activities. It is encouraging that much progress on the broader healthy homes agenda has been made already by HHWG partners, demonstrating a high level of effective interagency collaboration upon which future activities can build.

The *Strategy* is built upon a framework utilizing an overarching Vision Statement and five related Goals.

The *Strategy* will use this framework to improve the nation's overall health through coordinated action to address health and safety hazards in housing.

### Vision:

**Substantially reduce the number of American homes with residential health and safety hazards.<sup>33,34</sup>**

**Goals:** The *Strategy for Action* advances five goals to achieve this vision:

#### Goal 1

Establish Healthy Homes Recommendations

#### Goal 2

Encourage Adoption of Healthy Homes Recommendations

#### Goal 3

Create and Support Training and Workforce Development to Address Health Hazards in Housing

#### Goal 4

Educate the Public about Healthy Homes

#### Goal 5

Support Research that Informs and Advances Healthy Housing in a Cost-Effective Manner



# ENDNOTES

1. 42 U.S.C. § 1437(a)(1)(A). United States Housing Act of 1937 (act September 1, 1937, ch. 896).
2. Departments of Veterans Affairs and Housing and Urban Development, and Independent Agencies Appropriations Act, 1999. Pub. L. 105-276, title V, Sec. 502; October 21, 1998, amending the United States Housing Act of 1937, sec. (a)(1) (op. cit.).
3. Klepeis NE, Nelson WC, Ott WR, Robinson JP, Tsang AM, Switzer P, Behar JV, Hern SC, Engelmann WH. 2001. The National Human Activity Pattern Survey (NHAPS): a resource for assessing exposure to environmental pollutants. *J Expo Anal Environ Epidemiol.* 11(3):231-52.
4. Krieger J, Higgins DL. 2002. Housing and health: time again for public health action. *Am J Public Health.* 92(5):758-768.
5. Raymond J, Wheeler W, Brown MJ. 2011. Inadequate and Unhealthy Housing, 2007 and 2009. *Morbidity and Mortality Weekly Report* – January 14, 2011. Vol. 60 Supplement: 21-27.
6. U.S. Department of Health and Human Services. 2009. The Surgeon General’s Call to Action to Promote Healthy Homes. U.S. Department of Health and Human Services, Office of the Surgeon General.
7. Liu Y, Holland AE, Mack K, Diekman S. 2011. Disparities in the prevalence of smoke alarms in U.S. households: Conclusions drawn from published case studies. *J Safety Research.* 42(5): 409-413.
8. Adamkiewicz G, Zota AR, Fabian, MP, Chahine T, Julien R, Spengler JD, Levy JI. 2011. Moving environmental justice indoors: understanding structural influences on residential exposure patterns in low-income communities. *Am J Pub Health.* 101:S238-S245.
9. U.S. Census Bureau. 2009. Current Housing Reports, Series H150/09, American Housing Survey for the United States: 2009 U.S. Government Printing Office, Washington, DC, 20401.
10. Raymond J, Wheeler W, Brown MJ. 2011. Inadequate and Unhealthy Housing, 2007 and 2009. *Morbidity and Mortality Weekly Report* – January 14, 2011. Vol. 60 Supplement: 21-27.
11. Morley, R, Mickalide, A, Mack, K. 2011. *Healthy and Safe Homes: Research, Practice and Policy.* APHA press.
12. U.S. Department of Health and Human Services. 2009. The Surgeon General’s Call to Action to Promote Healthy Homes. U.S. Department of Health and Human Services, Office of the Surgeon General.
13. Klitzman S, Caravanos J, Belanoff C, Rothenberg L. 2005. A multihazard, multistrategy approach to home remediation: Results of a pilot study. *Env Res.* 99: 294-306.
14. Zaloshnja, E, Miller TR, Lawrence, BA, Romano E. al. 2005. The costs of unintentional home injuries. *Am J Prev Med*;28(1):88-94.
15. Trasande L and Liu Y. 2011. Reducing the Staggering Costs of Environmental Disease in Children. *Health Aff.* 30(5):863-70 23.
16. Mudarri D and Fisk WJ, 2007. Public health and economic impact of dampness and mold. *Indoor Air*;17(3):226-35.
17. Mason J and Brown MJ, 2010. Estimates of costs for housing-related intervention to prevent specific illnesses and deaths. *J Public Health Manag Pract.* 16(5 Suppl). S79-89.
18. U.S. EPA. 2002. Technical Support Guide for the 1992 Citizen’s Guide to Radon. 400-R-92-011. U.S. EPA, Air and Radiation. ([nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=000001L3.txt](http://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=000001L3.txt)).



19. Mudarri D and Fisk WJ. 2007. Public health and economic impact of dampness and mold. *Indoor Air*. 17(3):226-35.
20. Zaloshnja, E, Miller TR, Lawrence, BA, Romano E. al. 2005. The costs of unintentional home injuries. *Am J Prev Med*.;28(1):88-94.
21. Gould E., 2009 Childhood Lead Poisoning: Conservative Estimates of the Social and Economic Benefits of Lead Hazard Control. *Environmental Health Perspectives*. 117(7):1162-7
22. Nurmagambetov TA, Barnett SBL, Verugheze J, Chattopadhyav SK, Hopkins DP, Crocker DD, Dumitru GG, Kinyota S. 2011. Economic Value of Home-Based, Multi-Trigger, Multicomponent Interventions with an Environmental Focus for Reducing Asthma Morbidity: A Community Guide Systematic Review. *Am J Prev Med*. 41(2S1):S33–S47.
23. Children’s Safety Network/Pacific Institute for Research and Evaluation. 2010. [http://www.childrenssafetynetwork.org/publications\\_resources/PDF/data/InjuryPreventionWhatWorks.pdf](http://www.childrenssafetynetwork.org/publications_resources/PDF/data/InjuryPreventionWhatWorks.pdf)
24. Phelan KJ, Khoury J, Xu Y, Liddy S, Hornung R, Lanphear B. 2011. A Randomized Controlled Trial of Home Injury Hazard Reduction. *Arch Pediatr Adolesc Med*. 165(4): 339-45.
25. Departments of Veterans Affairs and Housing and Urban Development, and Independent Agencies Appropriations Act, 1999. op. cit.
26. U.S. Department of Health and Human Services. 2009. The Surgeon General’s Call to Action to Promote Healthy Homes. U.S. Department of Health and Human Services, Office of the Surgeon General.
27. U.S. Department of Health and Human Services. 2009. The Surgeon General’s Call to Action to Promote Healthy Homes. U.S. Department of Health and Human Services, Office of the Surgeon General.
28. Committee on the Hygiene of Housing, American Public Health Association. 1938 Basic principles of healthful housing preliminary report. *Am J Public Health*, 28(3): 351–372.
29. Centers for Disease Control and Prevention and U.S. Department of Housing and Urban Development. 2006. Healthy housing reference manual. Atlanta: US Department of Health and Human Services. Available at: <http://www.cdc.gov/nceh/publications/books/housing/housing.htm>
30. U.S. Department of Health and Human Services. 2009. The Surgeon General’s Call to Action to Promote Healthy Homes. U.S. Department of Health and Human Services, Office of the Surgeon General.
31. Protecting People and Families from Radon, a Federal Action Plan for Saving Lives, June 20, 2011. Available at: [http://www.epa.gov/radon/action\\_plan.html](http://www.epa.gov/radon/action_plan.html).
32. Brown MJ, Ammon M, Grevatt P. 2010. Federal agency support for healthy homes. *J Public Health Manag Pract*. 16(5 Suppl):S90-3.

*Advancing Healthy Housing – A Strategy for Action* was developed under the auspices of the President’s Task Force on Environmental Health Risks and Safety Risks to Children by the federal interagency Healthy Homes Work Group, specifically by the following departments and agencies:

- U.S. Department of Housing and Urban Development
- U.S. Department of Health and Human Services, including the Centers for Disease Control and Prevention and the National Institute of Environmental Health Sciences
- U.S. Department of Agriculture
- U.S. Environmental Protection Agency
- U.S. Department of Energy
- U.S. Department of Labor
- U.S. Department of Commerce’s National Institute of Standards and Technology.