



Healthy Homes

Fundamentals Training

May 2020

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INTRODUCTION

Applying Building Science to Create Healthy Homes

Progress in the understanding and implementation of homes as a system has been painfully slow over the last century. The challenge to establish residential building requirements in accordance with an understanding of health and the modern environment of increased chemical exposure has met little success. A growing cadre of building and leadership professionals with a fundamental knowledge of building and environmental science will ensure new and existing homes support cognitive, productivity, and health for occupants.

This course is the first step in applying a fundamental understanding of healthy homes and offers techniques to inspect and implement the following healthy home strategies:

- Fundamentals of a Healthy Home
- Diagnostic Tools for Assessments
- Assessment of Property Characteristics and Condition



This course provides the basic knowledge needed to assess existing properties and apply the fundamentals of a healthy home. (equipment included)

At the conclusion participants will be able to:

- Apply building science principles during an assessment
- Discuss healthy home principles with occupants and contractors
- Determine when and how to use a moisture meter, digital hygrometer, air current tester, and psychrometer
- Identify health hazards and make appropriate recommendations

BACKGROUND

Hayward Score was founded to help people understand the impact conditions in their home could have on health and to provide actionable, evidence-based advice to address issues. We are on a mission to transform health by transforming housing.

Our algorithmic diagnostic tool analyzes user input on more than 100 home attributes and occupant behaviors, including 23 health symptoms in addition to climate and outdoor pollution sources to calculate a Hayward Score (0-100). This allows us to assess risk and make best-practice based recommendations on how to improve both the home and habits to make the home less impactful on health. To date, we've provided Hayward Scores for over 70,000 owned and rented homes nationwide.

Hayward Score has invested over 5 years of research and collaboration in understanding the building and medical science that support a healthy home environment, including high-performance home innovations. Through our world-class research and big data analysis, we hope to make sure that all housing is supportive of good health.

These five simple principles provide the foundation for all that we do:

- 1. Continuous Fresh Air**
- 2. Proper Sealing and Insulation**
- 3. Non-Toxic Materials and Products**
- 4. Cleanable Surfaces**
- 5. Healthy Home Habits**

After years of coordinating efforts to bring to light the condition of housing and its impact on health, one need that has emerged is building management professionals trained in building science related to the indoor environment and its impact on health. To ensure an adequate supply of skilled professionals who can apply proven innovations and recognize the value of healthy homes Hayward Score created the Healthy Homes Fundamentals Training. The goal of this training is to bring together disparate research in building science and health into a training program that creates easily identifiable issues that impact occupant health and deteriorate building resiliency and offer actionable steps for improvement.

Healthy Homes Fundamentals Training Curriculum

Module/Learning Objectives

1. Energy Issues and Building Solutions

- Define terms of building science, ecological systems, economics of consumption
- Explain historical energy and environmental issues related to buildings
- Discuss the health, safety and comfort issues in buildings
- Define interconnections/inter-relationships among building systems

2. Introduction to Building Performance

- Describe how a building works as a system
- Explain the flow of air, heat, liquid water and water vapor
- Relate IAQ issues to health
- Relate building performance to overall sustainability

3. Flows: Air, Heat, Water, Vapor (Site related)

- Discuss the need to manage relative humidity (condensation)
- Describe the relationship between relative humidity and health
- Describe the air change rate and its relationship to balanced ventilation
- Describe how heat, air, and moisture flows are linked

4. Assessment of Property Characteristics and Condition

- Describe the key elements of building exteriors
- Describe the key elements of building interiors
- Describe Hazardous and Unsafe conditions

5. Putting it all Together: Experiential Learning in the Field

- Integrate class lessons with field demonstrations
- Perform evaluation of local home
- Diagnostic tools for property assessment (provided)
 - Moisture meter
 - Temperature Humidity, Digital Hygrometer
 - Air current tester

5. Conclusion: The indoor environment is a key element to human health

According to two congressionally mandated EPA reports, indoor air pollution ranked among the top five environmental risks to public health. In subsequent reports it was also found that indoor environmental pollution can pose a "substantive environmental risk."

Unfinished Business: A Comparative Assessment of Environmental Problems (U.S. EPA 1987)
 Reducing Risk: Setting Priorities and Strategies for Environmental Protection (U.S. EPA 1990)
 Charnley, G., & Goldstein, B. D. (1998). A public health context for residual risk assessment and risk management under the clean air act. Environmental health perspectives, 106(9), 519-521.