

Healthy Home in the Valley: A Case Study



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Approximately 23 million Americans suffer from asthma, according to the Centers for Disease Control and Prevention. Asthma attacks and other respiratory illnesses or allergies, characterized by breathing difficulties, can be triggered by exposure to allergens commonly found in homes such as mold, paint fumes, dust mites and building materials containing formaldehyde. According to the US Environmental Protection Agency (EPA) indoor air within homes and other buildings can be more seriously polluted than the outdoor air. Considering that most Americans spend approximately 90% of their time indoors-and 60% of that time in their homes-the risks to health may be greater due to exposure to air pollution indoors than outdoors.

The Family

After a remodel several years ago, Tricia and Bryan Smith of Selah, Washington, discovered their elementary school-age daughters were suffering from asthma and related health issues. Their research showed them that building materials could be a factor and how toxin-free home environments could help eliminate the triggers to respiratory problems in the kids. Working closely with builder Steve Weise, the Smiths planned this new Healthy Home in the Valley -- from finishes to ventilation, every component was designed and selected to create a healthy indoor environment for the family.

Materials

For the new house, products were specified that conform to ultra-low levels of volatile organic compounds (VOCs) including no-VOC paint, non-toxic floor finishes, and zero carpeting. According to the EPA, VOCs are responsible for many adverse health symptoms including asthma and cancer, and can be found in conventional paints, adhesives, wood finishes, carpet pads, and refrigerants.

Another common culprit is urea formaldehyde, a carcinogen typically found in pressed wood products and fiberglass insulation. Instead, Weise installed formaldehyde-free insulation, oriented strand board (OSB), particle board, plywood, cabinetry and medium density fiberboard (MDF) in walls, sub-flooring and roof sheathing.

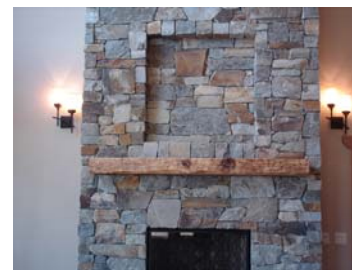
Locally available materials were incorporated such as reclaimed timber beams and salvaged wood flooring. Durable materials that are easy to maintain without toxic chemicals were included such as recycled-content tile, concrete countertops, 50-year siding and 50-year roofing. The cork flooring installed upstairs is made from the harvested bark of cork oak trees that naturally renews every nine years - without killing the tree,

Water

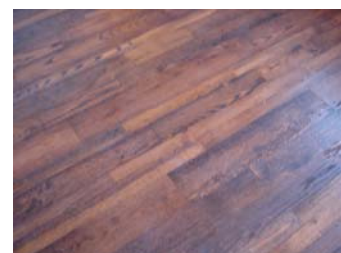
This home is located in a region where annual rainfall is approximately 8 inches, so conserving water is achieved indoors with low-flow toilets, showerheads and faucets. Outside, drought-tolerant landscaping features plants that are adapted to low precipitation, and pervious pavers allow the small amounts of water to infiltrate directly into the soil.



Custom Cabinetry, Energy Star® Appliances, Concrete Countertops and Recycled Glass Tiles



Fireplace-local & salvaged wood mantel and natural thin stone facing



Reclaimed wood flooring-no carpet



Low Flow-Faucets and durable ceramic tile

Ventilation

To help ensure that the indoor air is clean and fresh, a whole-house heat recovery ventilation (HRV) system and a high-quality electronic filtering system were added. The residential HRV uses separate blowers to move incoming fresh and outgoing stale air without mixing the airstreams, which improves indoor air while maintaining energy efficiency.

Energy Efficiency

The house is certifying to Energy Star® requirements that make it 30 percent more energy-efficient than a standard home. Features include insulating concrete forms (ICFs) and JM SPYDER Insulation for improved thermal performance of R-23 in walls and R-49 in the ceiling. The duct system was performance tested, and Energy Star® lighting and appliances were installed. The heating and ventilation system trunk lines are designed to minimize heat loss during extreme temperature swings. Renewable energy is captured in the solar-heated domestic hot water system; also infrastructure was installed to anticipate future solar panels to heat the water for the Wirsbo whole-house in-floor radiant heat system.

Lessons

The Smiths believe that their new home achieves a toxic-free environment where their children can thrive. Because of a commitment to share their experiences so that others can benefit from what they learned, their home has been open to public and industry tours and events in July, 2009 to demonstrate design decisions, product choices and construction methods.

Builder Steve Weise, Inc. helped the project achieve a 5 Star Built Green environmental rating through the local Central Washington Built Green program that meets the National Green Building Standard by the International Code Council and the National Association of Home Builders.

Project Website: <http://www.healthyhomeinthevalley.com/>

Central Washington Built Green Association: <http://www.builtgreencentral.com>

Sustainability Foundation: <http://www.sustainabilityfoundation.com>

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