

Healthy Housing Begins With The Foundation

Bacteria, mould and mildew require a specific environment to thrive and reproduce - this is typically a cold, damp area, which is common with cold floors and other parts of the home and ventilation system. LEGALETT's warm floor inhibits bacteria/mould/mildew growth since it is not cold and damp, but is instead always warm and dry.

Introduction

'Healthy Housing' is a phrase that is used very often these days. It is a good concept, and is based on what we have learned about living indoors with our modern construction techniques. There are many components to healthy housing that make up the 'healthy house'. Let's discuss some of the components:

The Air You Breathe - The air you breathe in a healthy home is generally less polluted. There are numerous sources of pollutants in a house, and listing them exhaustively would be beyond the scope of this article. A sample would be off-gases from building materials, off-gases and byproducts of people, and off-gases and byproducts of items in the house, as well as a very common pollutant - dust.

Bacteria/Mould/Mildew - These three problems are getting quite a bit of press lately, as links are being proven between the presence of these three items in a house and unhealthy occupants. These three problems each require a suitable set of conditions with respect to moisture and temperature to provide a suitable breeding ground where they can multiply to a level that causes human discomfort and ill effects, such as sick building syndrome.

Heating Comfort Level - The comfort level of heating is a common complaint, since most heating systems are not very good at providing an even supply of heat to different areas of the home. In addition, depending on the method of heating, you may end up heating the air higher than you would want to maintain a comfortable living space in the midst of cold floors, walls and windows. You may also end up with uneven heating in a room if the heating source is a point source. Stratification of comfort heat can also be a concern if the heat ends up in the area of the room that does not do any good to the occupants, such as near the ceiling.

People Friendly Materials of Construction - The choice of materials used in construction can have a great impact on the atmosphere that both the workers are subject to, as well as the occupants. Some materials are more toxic than others, especially when cut, glued, or heated. Some materials can also give off gasses once they are installed that are toxic or are irritants to people.

Moisture Level - The moisture level in the house has an impact on many things. Very high and low moisture levels for long periods of time are unhealthy. In addition, very high moisture levels can cause problems with condensation, which can further lead to building decay, as well as problems with the previously mentioned bacteria/mould/mildew. Maintaining the correct moisture level in the house is important to the quality of the living space.

THE LEGALETT WAY

The first thing that is installed in the home is the foundation. The manner in which the foundation is installed, along with its design, will have a significant effect on whether or not the home is 'healthy'. This is where LEGALETT Canada fits into the picture by providing the foundation of the healthy house.

The Company and its Product

LEGALETT Canada is a company that supplies the materials and designs for radiant-heated slab-on-grade foundations. The LEGALETT foundation is based on a slab on grade design with a, 8" thick concrete slab foundation. This thick slab contains a network of closed loop air ducts that circulate warm air from integral heat distribution boxes in the slab. This warm air heats the slab/foundation, which provides a warm floor that radiantly heats the home. LEGALETT has some unique advantages which are the basis for the healthy home.



Figure 1: The LEGALETT slab contains a network of closed loop air ducts which circulate warm air from integral heat distribution boxes in the slab.

The Air You Breathe

Motors and heating elements produce ozone. When ventilation or heating air is passed over these elements, it picks up the ozone and distributes it though the house, through the air you breathe. Ozone is a known aggressive agent, causing premature aging of the building and its occupants by oxidizing the materials and occupants of the home. Since LEGALETT uses a closed loop air system to distribute the heat, this air never mixes with the air you breathe - it is a separate system wholly contained within the floor. The only ventilation air that is moved around the house is the provision of the fresh air that is required for a healthy atmosphere. Since there is less air movement in a LEGALETT heated home, there is less dust movement and propagation. There are no discernible drafts that you would associate with a heating register.

Bacteria/Mould/Mildew

Bacteria, mould and mildew require a specific environment to thrive and reproduce - this is typically a cold, damp area, which is common with cold floors and other parts of the home and ventilation system. LEGALETT's warm floor inhibits bacteria/mould/mildew growth since it is not cold and damp, but is instead always warm and dry. This provides a hostile environment to the unhealthy organisms, and they never thrive in the first place - there isn't enough moisture in the slab to support them



Figure 2: The LEGALETT way provides an ideal and healthy environment for daycare and schools as well as homes.

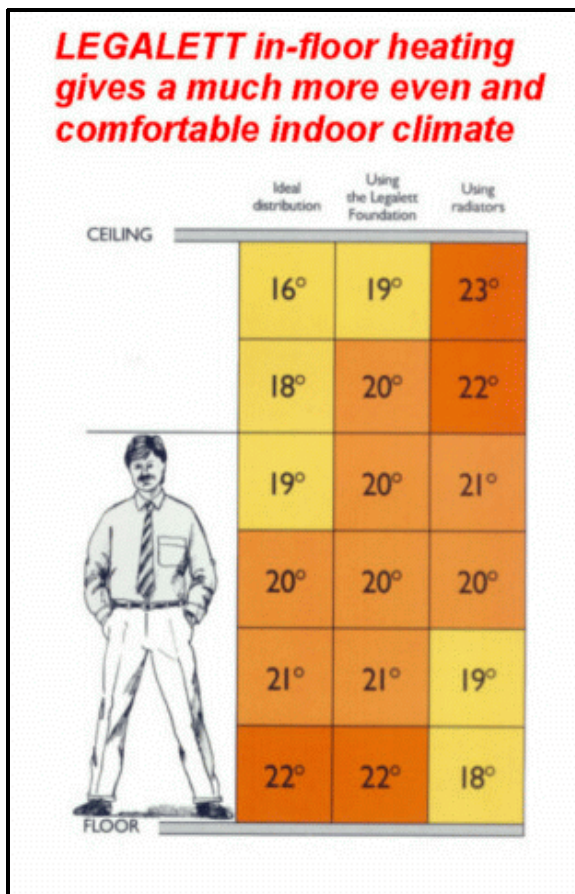


Figure 3: Comparison of Typical Room Temperature Distributions

Heating Comfort Level

LEGALETT warms the occupants in the home directly using radiant heat - this is opposed to overheating the air to heat the person. If you open the door, and a rush of cold air comes in, as soon as you close the door, you are warm again, since the LEGALETT foundation is immediately heating you again, and there is no time lag for the central air furnace to kick in to warm the air to warm you again. Since the floor is warm, it reduces aches and pains induced by walking on cold floors. It is better for children to play on a warm floor than a cold one - it is more comfortable for them. There are no hot air registers, baseboards or other high intensity heating sources which may be dangerous or harmful to occupants, furniture or plants. Instead, the LEGALETT foundation is comfortably warm, as a low intensity heating source, which remains only a few degrees above the ambient temperature in the room. There is also a tremendous heat storage capacity in the thick concrete LEGALETT foundation. Since during normal operation, the LEGALETT foundation stores enough heat energy to heat the home for approximately a week, when there is an extended power outage, the home remains comfortable by the heat being released from the foundation slab. Since there is also less heat loss from a LEGALETT house,

less energy is required to maintain the comfort level, reducing the pollutants produced during the generation of the energy for heating.

People Friendly Materials of Construction

LEGALETT uses concrete which does not off-gas like manufactured wood products or plastics or other artificial building products. LEGALETT lends itself very nicely to tile floor coverings - warm, of course - that is healthy because it is easily cleanable, and very comfortable to walk on. Unhealthy, smelly, dirt and bacteria trapping carpet is not required to insulate the cold floor from the feet. With the warm concrete floor, there are no musty areas, like the typical damp, musty basement. Concrete is also an excellent noise attenuator, providing a quieter environment for living. During construction, there is no dust blown around by using unsafe forced air ventilation equipment to heat the house during construction, such as fuel fired heaters, or the use of the house's permanent ventilation/heating system. Use of the house's permanent ventilation/heating system during construction will also contaminate it with dust, causing further problems for the occupants after construction. LEGALETT is also compatible with many other healthy systems for ventilation and air conditioning.

Moisture Level

The slab is not damp nor wet. Once the curing has completed, typically during construction, there is no moisture coming from the concrete to contribute to a high moisture level



Figure 4: The LEGALETT Way: Safe and Comfortable Living for All Members of the Family

In summary, the LEGALETT foundation satisfies the requirements for healthy housing, and serves as a significant component to constructing a healthy home. It, in fact, becomes the cornerstone and foundation to building a healthy home - build a healthy home with a good foundation - build it from the foundation up!