



Stephen's Healthy Housing Column

Time to Look at Your Home in a Different Light: Basements, Part 2

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Stephen Collette is a Certified Building Biology Environmental Consultant (BBEC). This lengthy certification analyses the built environment and how it impacts people's health. Stephen was a natural builder for 5 years specializing in straw bale construction. Stephen has an engineering background and training which enables him to understand the various processes occurring within the home and how they can interact. Applying these skills and knowledge to the standard home and small office enables Your Healthy House to find the reasons for poor indoor air quality and to create solutions to help create your healthy house.

Stephen Collette is a Leadership in Energy and Environmental Design - Accredited Professional (LEED AP), which allows Stephen to use the Canada Green Building Council's guidelines and method to ensure a quantitative approach to building

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Intro

For many people who have had MCS for some time, they have slowly made their living space their sanctuary. For those who are newly diagnosed, things are going to be different, and need to be for you to stay as well as possible. That means looking at your home in a different light. This series of articles will walk through the kinds of elements that I look for in a healthy house, and where the potential problems lie. We will focus on the sneaky things that you may have missed in your own process.

Basements

In the last article we talked about the building science behind basements. In this article we will talk about ways to make things better and more livable in your basement.

First, a point of clarification. I come from a heating climate and my basement is full height, finished (in my particular case), and is usable space. If in your geographic location a basement is four feet or shorter, full of dirt, open to the outside air, or other strange things, then that is called a crawlspace, or a dirt

crawl, or even a dirt basement. We are not specifically talking about those creatures of a different stripe.

By understanding the air movement into the basement as explained in the last article, you can now see the value in air sealing the basement from the outside to reduce the inflow of dirty, dusty, moldy, and moist air from outside. Typical places of entry are around the old windows in the basement where the air keeps coming in and making a mess of things, as these are usually the last place people spend money on good windows. Seal up the windows themselves with tape, such as aluminum tape or Tuck tape (a red air barrier tape). Always test for your sensitivities prior to applying a product.

The biggest detail is not the windows themselves, but the area around the window that is between the window and the wall bits. This is where a heap of dirty air comes in. If the house is more than 20 years old, then there is most likely just a piece of fiberglass insulation stuffed in between these two elements. That slows down the thermal movement, but it does nothing for air movement. I recommend as a low cost solution to tape or caulk around the window trim to the wall to make it air tight. Try to find a zero VOC (Volatile Organic Compound) caulking to use. Doing this is a quick fix.



Ideally, remove the trim and add some spray foam as an insulator and an air barrier, and then reinstall the trim. There are now some low VOC foams out there, but not many. Unfortunately foam is the best solution for what it does. Companies are working on better versions, but they are not easily accessible as of yet. If you can't do foam, then tape up between the window and the wall directly with the air barrier tape of choice, and put the trim back on. Of course if you have gone to all that trouble, of tearing everything out, then maybe putting in a new window isn't a bad idea. Energy efficiency grant money seems to be everywhere right now, and if it can help make your home healthier, get on board.



Now the other place to spend efforts air sealing are around the floor joists and rim beam. These are the wood parts of the house that sit directly on top of the concrete bits. Go to your laundry room, as it typically unfinished, and look up at the top of the concrete wall where you see wood. The floor joists run the width of your house and the sill plate is the piece of wood that they sit on, which is lying on top of the concrete. The rim beam is the piece of wood you see on the outside of the floor joists. All these bits leak air, lots of air. If there is no gasket (pre late 1970's) between the concrete and the sill plate, then heaps of air is moving between these. So seal up the areas with caulking, spray foam, tape, or whatever. Seal around each "box" between the sill, floor joists x 2, the floor decking, and rim. And, then seal between the sill plate and concrete.

There are companies out there that do just this sort of thing, all the time. They typically charge by the foot to do a job. Ask about chemicals used, off gassing, having them lay a little bead in the driveway on a piece of cardboard so you can smell it prior to curing and after first. You might volunteer to go to one of their jobs to do that part, to make it easier for everyone.

Now we have the place air sealed, so we are controlling the environment better. Next you need to dehumidify the space in the warmer months because of the moisture condensing in the basement reaching the dew point. There is not a basement I've seen that didn't need a dehumidifier. Dehumidifiers are a key component to any healthy house that has a basement. Water vapor in the air can lead to mold growth, damage to contents and building materials and can impact occupant health. Very humid basements make are a comfort issue as well as, the damp, smelly basement is the last place people wish to be in a house. Dehumidifiers remove

moisture from the air and it condenses into water. When purchasing a dehumidifier, consider an Energy Star rated unit, as it consumes the least amount of electricity compared to other similar models. Old brown units suck as much electricity as water and cost a large amount to operate. The next important function is a built in hygrometer. This allows you to set the relative humidity in the basement and the dehumidifier will shut off when you reach that set point. Ideal comfort for humans is between 35-45% relative humidity. Above that is ideal for mold growth, and this is why you are dehumidifying. Below that is ideal virus growth, which is why we get sick in the winter, as it is too dry. Setting it within the parameters will ensure your dehumidifier is not working too hard.

Anice feature is a built in hose bib. This allows you to hook a hose up to your dehumidifier and run it to a floor drain, so that you never have to empty the bucket. Dehumidifiers are also sized for square footage, so please ensure the unit you purchase has the ability to remove the water from the space it is in. If you have many separate areas in a basement, it can be more effective to have more than one smaller unit taking care of sections of basement. Air conditioning does help in the reduction of the need to dehumidify, but rarely does it mean you do not need one. Dehumidify during the cooling season and when the furnace is not running.

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To prevent catastrophic failures, you should consider a sump hole. This will create a buffer area between you and the rising ground water. This is usually a hole dug in the floor of your mechanical room about the size of a big garbage can. A plastic bin goes inside with holes in it, along with a submersible pump that pulls the water out of the hole and drains it outside somewhere safe. In radon country and very energy efficient houses, these can be sealed lid units so no soil gases are rising up into the house. I've seen some 1970's houses that have a 12-inch sump hole. That's not much protection assuming the sump pump is working. The bigger the hole you have, the better insurance you have that it will work when you need it. Also remember the electricity goes out in severe weather, so check your pump and water level during those times. Battery back ups, water alarms, or other solutions are things to consider, depending on how much water you have in the water table below your house. I've talked about grading, and downspouts in the article that looked at the outdoors. Please refer to the details in that article in the newsletter archive at http://www.mcs-america.org/index_files/newsletterarchives.htm. These are paramount points in keeping the rainwater from entering your house through the basement walls and need to be addressed for any healthy basement.

In the next article I will talk about the finishing of the basement, with respect to walls, flooring, furniture, and activities in the basement, to ensure that the efforts that have been carried out up to this point yield a successfully healthy house.

About the Author

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