



**The following article, written by Cindy Meehan-Patton
appeared in the Asheville Citizen Times**

Please, Build My House so it is Healthy and Dry!

Part 1:

By: Cindy Meehan-Patton, Shelter Ecology, Inc.

One of the biggest obstacles we face is to stay healthy in this challenged world we live in. I have discovered, through years of experience, that our homes can be the culprit for many immune system issues. The litigation battles over toxic mold in buildings is on the increase by 200% over the past 10 years.

This 3 part article portrays a one sided scenario of a "typical" person building a "typical" new home. The implied dialogue with the builder gives the reader direction on how to take responsibility for creating a healthier home. I chose this scenario because most people, indeed, need direction; knowledge and understanding on the methods to make their home healthier. Do not leave this up to the builder, because most will only build according to what they have always done- creatures of habit that we are! This scenario is affordable and doable for the "typical" middle class homeowner and the "typical" builder. These simple efforts will also make a home more durable and sustainable for present and future occupants.

The main focus is on creating a toxin and mold free home due to the growing health problems people are facing from living in homes that are not built with these things in mind. This includes construction practices of many generations, including the present! Factually, the only way to keep a home moisture free in our high humid climate is through airtight construction techniques, regardless of the building materials you use. Using the least toxic materials possible inside the home is important too. Unfortunately, much like the food industry, "Natural and Low VOC" labels are deceiving.

This part (1) of the article will focus on the foundation or feet of the home. Part 2 (to be printed at a later date) will focus on framing, insulation, siding and roofing. (The head and core of the home.) Part 3 will focus on the HVAC and ventilation systems, dehumidification and chemical pollutant issues, (the immune system of the home). So let the conversation begin!

"One of my biggest concerns is my crawl space. I have heard that the biggest moisture and mold source in any given home, regardless of the age of the home, is through a vented crawl space or unfinished basement. I prefer to seal the earth floor and concrete walls with plastic -and the vents need to be closed up. There are local businesses that specialize in sealing crawl spaces and unconditioned basements according to "Building Science" principles. I will look into this.

Elevate a dehumidifier and drain it to the outside, away from the house. Add HVAC supplies through my main floor above, down into the crawl space- so I can heat and cool the space, as needed. And for code inspections please have the pest control applicators use the bait trap system for termites, I do not want any chemicals applied. Hey, if my house is built to stay dry, I will not have a termite problem!

To prevent wicking of moisture into my foundation wall over the many years I will be living here- please use a rubberized waterproofing membrane rather than the inadequate granular coating that most builders use to meet code. In ten years I do not want my crawl space to be wet! The earth around my home should be sloping away from the house. Please fill two feet around the foundation wall all the way around the perimeter of the house- with a gravel drain bed rather than earth. Oh and please put that inexpensive slotted drainpipe from Home Depot in the bottom of the gravel bed. This will help to keep water off the block. Never mind- I will do this part myself. I know this is not something you

would normally do, so simply dig this area out at the final grading. I am pretty good with a shovel, so I can help with the gravel fill. With larger overhangs and a gravel drainage bed around my home I will not need gutters, so that should create a small savings! Gutters are so hard to maintain in these mountains.

This may be the most critical part of building my home so that it stays dry. So, let's soak this in and talk more next week when we meet. Thanks for your time."

Part 2:

Maintaining health in this challenged world we live in will be a lifelong pursuit for humanity. I have discovered, through years of experience, that our homes can be the culprit for many immune system issues. This 3 part article portrays a one sided scenario of a "typical" person building a "typical" new home. The implied dialogue with the builder gives the reader direction on how to take responsibility for creating a healthier home. I chose this scenario because most people, indeed, need direction; knowledge and understanding on the processes needed to make their home healthier.

Do not leave this up to the builder, because most will only build according to what they have always done- creatures of habit that we are! We all need to learn here. This scenario is affordable and doable for the "typical" middle class homeowner and the "typical" builder. These simple efforts will also make a home more durable and sustainable for present and future occupants.

Past and present construction practices often do not focus on creating a toxin and mold free home. Most people are now requesting it due to the growing health problems resulting from living in homes that are not built with these things in mind. Factually, the only way to keep a home moisture free in our high humid climate is through airtight construction techniques, regardless of the building materials you use. Using the least toxic materials possible inside the home is important too. Unfortunately, much like the food industry, "Natural and Low VOC" labels are deceiving and we, as homeowners and builders, need to know more.

Part 1 focused on the foundation (or feet) of the home. This part (2) focuses on the framing, insulation, siding and roofing (the head and core of the home). Part 3 will focus on the HVAC and ventilation system, dehumidification and chemical pollutant issues (the immune system of the home). So let us continue the conversation:

"Leave a 2" air space behind my siding, I know this is not required by code, but I prefer it. It should not add extra cost. The O.S.B. (oriented strand board) sheathing needs to be sealed on both sides. On the side facing the siding, I would like to seal it with a good waterproofing sealer and on the surface facing inside I would like to seal it with AFM Safe Seal, which will prevent outgassing of formaldehyde to my indoor air. I understand that this is the most common chemical pollutant in new homes. I will purchase and apply these sealers myself so that no extra cost is added to my contract.

Please insulate my recycled, finger-jointed, 2 x 4 stud walls with formaldehyde free fiberglass batt insulation. Prior to installing the insulation, all cracks, seams, joints and openings need to be air sealed (with caulk). I can download important areas to air seal from the Internet and do it myself. I will go buy the caulk now! By the way, I heard there is a low toxic caulk available through AFM Safecoat. Unfortunately, it costs more than standard caulk. The plastic vapor barrier on the inside of my wall needs to be installed carefully, to prevent air leakage or else the efforts to air seal nullified.

My roof needs to overhang enough to protect my exterior walls from heavy rains. I would love to use a less toxic, longer lasting, more renewable material than asphalt shingles- but I cannot find an alternative that is affordable. I have heard that attic spaces can also be a problematic mold source. I would like to prevent that by insulating and air sealing the underneath side of the roof framing rather than the floor of the attic, allowing the air infiltration to flow back into the conditioned floors of the house instead of staying sealed up in the unconditioned attic space. Ceiling fans can help to direct indoor air.

I know you need to go back to your other job site, so we can continue this next week when we meet. If you did not take notes, don't worry, I have it all itemized so that it can be plugged into the contract quickly and easily."

Part 3:

Maintaining health in this challenged world we live in is a life long pursuit for us human beings. I have discovered, through years of experience, that our homes can be the culprit for many immune system issues.

This 3 part article portrays a one sided scenario of a "typical" person building a "typical" new home. The implied dialogue with the builder gives the reader direction on how to take responsibility for creating a healthier home. I chose this scenario because most people, indeed, need direction; knowledge and understanding on the methods to make their home healthier. These simple efforts will also make a home more durable and sustainable for present and future occupants.

Factually, the only way to keep a home moisture free in our high humid climate is through airtight construction techniques, regardless of the building materials you use. Using the least toxic materials possible inside the home is important too. Unfortunately, much like the food industry, "Natural and Low VOC" labels are deceiving. We need to know more.

This final part (3) of the article will focus on the HVAC and ventilation systems, dehumidification and chemical pollutant issues, (the immune system of the home) So lets finish up where we left off:

"Right after the HVAC duct returns are installed, don't forget to seal them up until we are completely finished with the construction of the house. I do not want this dangerous construction dust in my families lungs. I understand that you will install the HVAC system in the crawl space. Now that my crawl space will be dry, heated and cooled, I am fine with this. But, please make sure the ducts are very tightly sealed with mastic. I found low toxic mastic on the Internet, so I will be responsible for getting that to the HVAC installer.

Speaking of HVAC systems, I do not want any combustible fuels (oil, propane or gas) in my house, which are not only a potential chemical and CO2 pollutant source, but they can cause condensation problems. I prefer an energy star rated- 17 SEER- electric heat pump that provides central air conditioning and heating. I am not interested in paying for a big name unit, just one that has these features. I am shopping for a non-polluting wood stove for back up in case I loose electricity. I actually look forward to the day that God will leave us with the sun and wood to rely on.

Some of my friends have built an airtight home and have informed me of the need for a fresh air system or mechanical ventilation system. I am looking for the most affordable unit. This is an essential addition to my HVAC system because it will act as the breathing machine or lungs of my home. I do not want to have to rely on natural ventilation because then I am just defeating the purpose of creating a dry, mold free home by letting all that moist and polluted air in. I will talk with the HVAC installer more about this too.

Dehumidifiers, strategically placed, are needed for the many moderate temperature days we have that do not require heat or air conditioning, but are still to humid to open the windows. I need to monitor the humidity by checking the gauges placed strategically, like the kitchen and crawl space. When the humidity is 55% or higher, I will rely on my mechanical systems to keep my indoor air dry (between 42- 55% humidity). When the humidity is below 55%, I can open my windows to let that dryer, fresher air in.

I need to use the least toxic paints, stains, glues, caulk, flooring, cabinetry and furnishings available. Some VOC's (Volatile Organic Compounds) are regulated by the EPA, but many are not. I do not trust labels. I will get specific content listings from manufacturers and be responsible for purchasing all of these products myself. Your timeline for my job will inform me of when I need to have them on site for you to install. This is so important to the health of my home and family.

I have decided to put all this on a CD that you can copy into my contract so it is easy for you. I am so excited about being able to create a dry, healthier home on a budget. Thanks for agreeing to work with me on this."