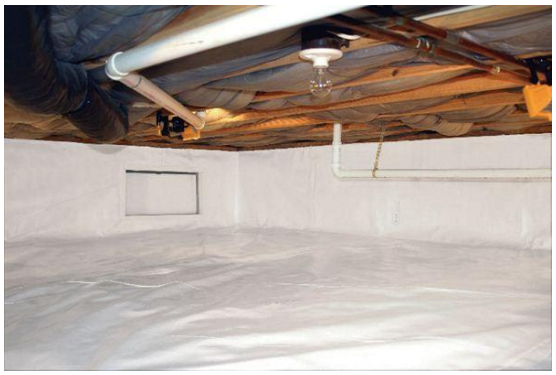

photos courtesy of www.cleancrawlspace.com

Crawl Space Vapor Barriers?

If the soil under your home is damp or wet, does covering the soil with a plastic membrane really work? Well, if you do it right, YES. There are many benefits in doing so, depending on your situation.

First – Let's look at the main issues.

There are two main issues that arise from having excessive moisture within the crawl space soil:

#1: "Personal Health Issues"

#2: "Structural Stability Issues"

Personal Health Issues

Most of us don't really think much about the air we breathe inside our homes. Surprisingly enough, up to 50% can be air that filters up from the crawl space under your home. Air is drawn up between the floor framing, plumbing, electrical cutouts, gaps in the flooring, furnace ducting and the like.

When soil conditions arise due to moisture, one can often observe golden brown colored mold on the surface of the soil, along with other plant growth and leached out mineral deposits etc. The air under your home can be affected by these soil conditions. You certainly wouldn't want to spend too much time breathing that air without a respirator. Would you?

Structural Stability Issues

Excessive moisture conditions in the crawl space soil can cause numerous structural issues. Dry rot, fungus and mold for starters. It is also common to see hardwood floors become compromised and "cup" due to the differential in moisture content between the surface and the underside of the flooring.

Second – How do you solve these issues?

Homeowners can generally narrow down the topic of solutions to a few common choices. Do I . . .

1. Install a sub drainage system around the home?
2. Install a layer of concrete over the crawl space soil?
3. Install a plastic vapor barrier?

Sub drainage systems can be somewhat effective in keeping the water saturation layer low enough to keep the soil dry, but can be costly to install. They work best when installed deep enough below the crawl space soil elevation.

Concrete "rat proofing" can keep a "lid" on the soil, but it has its limitations. Installing concrete properly with a vapor barrier below it is best, but can be costly as well.

Plastic vapor barriers on top of the crawlspace soil to encapsulate it can be very effective, depending on the material used and the installation process. Inexpensive plastic sheeting, randomly placed and overlapped provides some protection for awhile but eventually gets moved around and becomes compromised. A professionally installed plastic vapor membrane barrier system works well when installed correctly.

Third – Which Solution is best for me?

That depends on your individual situation. Tradesmen usually offer a homeowner the type of solution they know and are familiar with. This can limit the options available, based on the experience of the contractor.

Sub drainage systems work well when the amount of water entering the crawl space is significant and may also be contributing to foundation settlement issues.

Concrete rat proofing and simple plastic sheeting gives some protection when water intrusion is minimal.

Professionally installed vapor membrane systems provide a much better level of protection and can also handle moderate subsurface water intrusion.

Sometimes, when excessive subsurface water is prevalent, a combination of subsurface drainage, as well as a vapor barrier system can be installed at the same time.

What are the benefits of a "Crawl Space Vapor Barrier System"?

To understand the benefits, it is necessary to educate ourselves a little bit on how moisture gets into the crawl space area. Two significant sources are soil water intrusion and air humidity issues.

1) Soil water intrusion

Subsurface ground water can migrate into the crawl space soil from various sources.

a) Water saturating the adjacent ground around your home.
b) Hillside underground water migration.
c) Water table issues

2) Air humidity issues

When the outside air is higher in temperature and humidity than the crawl space air, the outside air actually migrates into the cooler crawl space area through the crawl space vents, etc. In doing so, it causes the moisture content "humidity" of the crawl space air to actually rise.

With this in mind, a vapor barrier can solve the 50% of the crawl space ground soil moisture conditions but what about the other 50% or so that is effected by the crawl space vents?

Many studies have been undertaken with regard to the actual blocking off of the crawl space vents, especially on the East Coast. The findings are very interesting.

Vent blocking is one option to address crawl space air problems. This approach is taboo to many building officials and building codes, however, there are different ways to look at it. If you block off the vents and don't

provide any vapor barrier over the soil you can have a problem. If you block off the vents, as well as provide a vapor barrier, this is no different than a basement room, as long as it is conditioned. You don't see any vents in a basement room do you?

Coming up with the right solution is where different thinking becomes important. A professionally installed vapor barrier system prevents moisture from coming up from the soil below. Blocking off the vents limits the outside effect of increased moisture. For a solution like this, you may need to compromise with the City Building Department, but the California Building Codes regarding these issues are already changing.

Professionally installed vapor barrier systems include several features which allow them to perform well. They include the installation of a drain mat below the vapor barrier, tight adhesion of the membrane barriers to the concrete stem walls and foundations, anti-microbial benefits to the reinforced fabric membrane, custom sump pump(s) for moderate subsoil water intrusion removal, custom drains to the membrane surface (at a low point in case of leaking water pipes etc.) and dehumidifiers to create a better conditioned space when appropriate.

With this thinking in mind, the crawl space can essentially become almost like a room under your main floor. The air quality becomes more beneficial to your health, the moisture content in the crawl space air is lowered to a point where the structural integrity of the framing is protected and moisture issues that impact flooring systems above are reduced.

So do your research and educate yourselves on alternative methods of controlling crawl space conditions. Hopefully you will be able to provide yourself and/or your client with the best alternative when addressing options regarding crawl space moisture condition issues.

In closing, there are many beneficial reasons to consider crawl space moisture barriers but prior to installing any system, I would suggest speaking with professionals who understand the science and principles behind these systems first.

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