

# CleanSpace<sup>®</sup>

## Crawl Space Encapsulation System<sup>®</sup>

*There are three things that destroy materials in general, and wood in particular: water, heat and ultra-violet radiation. Of these, water is by far the most important.*



*The real solution to dirt crawl spaces -*

**The CleanSpace<sup>®</sup> System**  
- developed by  
**Basement Systems,**  
the world leader in dry,  
below-ground technology

A dirt crawl space under a home is a very bad idea. The earth has very high humidity in the soil. This water vapor moves easily into the crawl space and upwards into the house environment.

A damp environment is very unhealthy and destructive. Mold thrives and reproduces by producing airborne spores by the millions, and some molds are toxic.

Insects and critters of all kinds love damp environments and wet materials. Rot and decay occur in damp environments causing structural damage.

The natural airflow in a house is from bottom to top. This sucks the moist air and everything in it up into the living areas of the home.

Mold spores, odors, humidity and critters create a very unhealthy environment for people. Many people are allergic to these things, and experience a host of symptoms and don't realize that their dirt crawl space is affecting their health.

Dirt crawl spaces do not have to be wet or flooded to be extremely unhealthy.

Heating and cooling costs are higher in a home with a vented dirt crawl space.



# The Problem and The Damage

## BUGS & CRITTERS

Dirt crawl spaces are great places to live, thrive and reproduce if you're a bug. There is an even temperature, moisture, damp wood and shelter. Spiders, beetles, centipedes, termites, and all kinds of other insects are found in dirt crawl spaces. Animals such as mice (dead and alive) are commonly found in dirt crawl spaces. In some cases, even rats, snakes and small animals have been found.



## OUTSIDE AIR

Most dirt crawl spaces are vented to get the moisture out. The problem is that the vents let warm humid air in during the summer. This adds moisture to the crawl space, and makes the house harder to air condition as all this moisture needs to be wrung out of the air. In the winter, the vents let in cold air, which causes very cold, uncomfortable floors upstairs and higher heating costs.



## MOLD & STRUCTURAL DAMAGE

Mold spores, the seeds of mold, are in the air everywhere. All they need to grow is organic material such as wood, the right temperature range, and moisture. Of these, the only one that can be controlled is moisture.

Dirt crawl spaces have the high humidity levels necessary for mold growth. Humidity levels from 50% to 90% are easily found in dirt crawl spaces that have never flooded.

Mold can grow on dirt, insulation, framing and even under your carpet on the first floor. Mold destroys organic materials as it feeds on them. Mold reproduces by producing millions of floating airborne spores, which some people are very sensitive to. Spores can be dormant for many years, waiting for the right conditions to grow. Some molds produce mycotoxins, such as the black mold *Stachybotrys*. Many articles can be found on the effects of mold and toxic mold.

Don't panic; there is a solution that will stop your crawl space from being a hospitable environment for mold. Mold will not grow when the humidity levels are reduced below 50%.



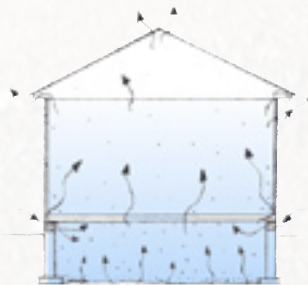
## CONDENSATION

Because of the high humidity level in a dirt crawl space, cool surfaces will sweat with water vapor condensing out of the air, such as the earth at 55 degrees, concrete and metal surfaces. This causes rot, smells, and is a water source for critters.



## RADON GAS

Radon gas is a naturally occurring radioactive gas that comes from the ground in most areas of North America. The EPA has identified radon gas exposure with increased risk of lung cancer. Dirt crawl spaces allow radon gas to enter the home easily. The **CleanSpace**® Encapsulation System is the ideal solution to reduce radon entry from a dirt crawl space. The system can be combined with a fan and exhaust pipe to actively draw radon laden air from beneath the **CleanSpace**® liner and exhaust it outdoors.



*As heat rises, the natural air movement in a home is upward. Air escapes out of the upper levels, and is drawn upward from the lower levels.*

## FOR MORE INFO:



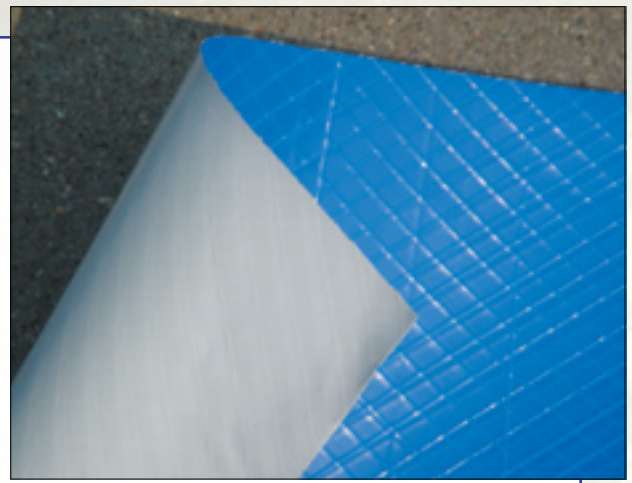
See the book "**Crawl Space Science**" for more detailed information on crawl space concerns, issues, and solutions.

Available from your local **CleanSpace**® dealer.

# The Solution:

## The CleanSpace® Liner

The **CleanSpace®** liner is used to isolate the home from the earth completely and permanently. The liner is a heavy 20 mil thick material similar to a pool liner. It is manufactured in 7 layers - a blend of high density polyethylene, low density polyethylene, and two layers of polyester cord reinforcement. It is blue on one side and white on the other. The bright white finished side really brightens a crawl space with the available lighting and allows you to easily see that your crawl space is free of mold, insects and dirt. The **CleanSpace®** liner is manufactured with an antimicrobial additive called UltraFresh – molded right into the material.



## How It Works...

The **CleanSpace®** Crawl Space Encapsulation System® completely isolates your home from the earth. This dramatically reduces the humidity level in the air which, when combined with sealing outside air and dehumidification, will eliminate mold growth and rot from your crawl space and make the whole house healthier.

Trained installers will remove wood and organic materials from your crawl space floor. Rocks and uneven surfaces are leveled, depending on the crawl space conditions.

The **CleanSpace®** liner is carefully cut and installed. The workers will usually be working in their socks, once the floor piece is laid out to keep the liner clean. That's how clean your crawl space will be!

Small holes are drilled into the top of your crawl space walls, and nylon fasteners are installed to permanently secure the **CleanSpace®** liner to the walls.

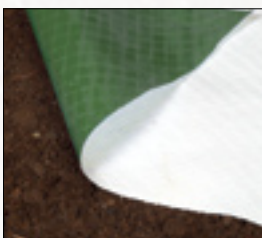


The top edge of the **CleanSpace®** liner is sealed to the walls with polyurethane sealant. All seams are sealed with special 4" wide sealing tape and/or sealant made for the **CleanSpace®** liner. The result is an attractive, bright, tough, impervious liner - and a healthy home above it!

## Additional CleanSpace® Products...

**CleanSpace® Light** is a 10 mil cord reinforced crawl space liner with UltraFresh antimicrobial protection. It can be used on crawl space walls and floors.

While not as durable or puncture-resistant as original CleanSpace®, CleanSpace® Light can be an economical alternative by itself or used over another product when puncture resistance is less important because it is a 'sandwich' system with two products.



**CleanSpace® TerraBlock™** is a unique flexible insulation and crawl space liner in one. It's the first insulation for wavy crawl space floors, which can be as cold as 55°. It can be used on crawl space walls as well. ¾" foam insulation has a white vapor barrier on both sides. The puncture resistance is superior. CleanSpace® TerraBlock™ is for those customers that want the most energy savings from their project. TerraBlock™ can be used by itself, but because it's not super-flexible, intricate details will have to be wrapped with regular CleanSpace®.



**CleanSpace® HeatBlock™** is a 10 mil cord reinforced crawl space liner with UltraFresh antimicrobial protection. It's a reflective barrier that will stop most radiant heat transfer and reflect heat from your home back into the crawl space. It can be installed on crawl space walls or floors.

It may also be installed on the walls only, with a different CleanSpace® liner on the floor. It's a great alternative with CleanSpace® Drainage Matting too!



Your local **CleanSpace®** dealer can prescribe what's best for your home.

## DRAINAGE OPTIONS

A Basement Systems SmartSump™ will be necessary in wet crawl spaces to drain the water and pump it out. The SmartSump™ has a reliable Zoeller 1/3 hp cast iron pump in a strong durable sump liner with holes in it to accept water from the ground. It features an airtight lid to keep the moisture and bugs out, and a WaterWatch® alarm system to let you know if there is ever a plumbing leak, pump problem, or power failure.

The lid and unique sump liner are designed to easily accept the **CleanSpace®** System for an air-tight seal between the **CleanSpace®** and the SmartSump™.



*Other options may include a perforated drainage piping system.*



The SmartSump™ will be installed in a low spot in your crawl space. As an option, a drainage swale or trench system can be developed around the perimeter to drain water to the SmartSump™. An UltraSump® battery back-up is a highly-recommended pumping option for your crawl space.

## CRAWL SPACES with CONCRETE FLOORS

Crawl spaces with concrete floors that are wet or damp can be very difficult to install a drainage system in because they are so low, and removing concrete is difficult or impossible. Further, a concrete floor is porous and lets water vapor pass through it. The **CleanSpace®** System with **CleanSpace®** Drainage Matting is a perfect solution for these problems!



*Drainage Matting*

## SEALING OUTSIDE AIR

Building Scientists and the U.S. Dept. of Energy agree that vented crawl spaces in warm and cold climates are a bad idea. With the **CleanSpace®** Encapsulation System, your vents will be sealed up! This will save you energy costs, and make a more comfortable and healthy home.



**VENT COVERS**

## OTHER ACCESSORIES:



**EverLast™ Crawl Space Door**  
Durable & airtight crawl space door



**The Turtl™** – Durable, airtight, and lockable crawl space access system



**SmartJack™ Crawl Space Stabilizer** Stops settling & levels floors

## DEHUMIDIFICATION

Many crawl spaces can benefit from dehumidification and most need it to dry the crawl space air.

Your dealer can recommend a SaniDry™ unit appropriate for your home.



*The SaniDry™ Model CSB air system will complete your CleanSpace® System.*

For more information, contact your local **CleanSpace®** dealer.