

## Moisture & Mold

A structure with a mold problem first and foremost has a moisture problem that must be addressed. The origin of the moisture could be related to any number of interior or exterior variables. Interior variables are often related to day to day operations, such as taking baths, showering, and cooking. In addition, mechanical HVAC system leaks may depressurize a home, and plumbing fixtures and pipes could leak unbeknownst to the occupants of the home. The number of inhabitants and lifestyle habits also play a part. For example, there will likely be more showering and cooking in a home occupied by many people than a home occupied by just one or two people.

Exterior variables such as missing roofing materials, poor grade slope, damaged/missing gutters or downspouts, exterior wall damage, openings in walls, or poor flashings can contribute to moisture entering a structure. A proactive drainage plane that ensures moisture physically goes from one exterior surface to the next is always best.

### Background

- *Stachybotrys chartarum* is a common, slow-growing, greenish-black fungus that colonizes well on cellulose-containing materials with low nitrogen content, such as drywall. Older homes constructed with traditional plaster or plaster board are not as “mold-friendly” compared to cellulose-rich drywall. Areas with a relative humidity above 55% that are subject to temperature fluctuations (such as basements) may improve the rate of growth of this fungus.
- Older homes constructed with sawn type lumber (dimensional lumber like 2x4s) and sawn planking boards, used to support floors and roofs, are less susceptible to mold compared to engineered lumber like OSB (oriented strand board), and PB (particle board). OSB and PB are constructed in a factory using sugars and starches that molds/fungus can readily breakdown and absorb.

### Considerations & Recommendations

- Lowering a structure’s utility costs by improving air sealing, adding insulation, installing new windows and doors, etc. will potentially increase interior and attic humidity levels. A structure typically breathes from the higher pressure basement exiting the lower pressure attic (see Figure 1). A well-sealed home may/will exhaust excessive interior moisture into the attic during the heating season increasing mold-fungi growth (especially on engineered lumber products); therefore it is important to be proactive when sealing your home. For ideas on how to properly manage excess humidity in a well-sealed home, review some of our other newsletters, including “Bath Fan Operations.”
- When higher indoor humidity levels are combined with cold winter temperatures and lower airflow, the lower interior wall surfaces on exterior walls in closets or behind furniture may become relatively cold and experience a type of mold that darkens the walls. With voids in wall insulation, especially in the harder to insulate corners, a convective loop or a thermal bridge may contribute to the colder surface temperature (see Figure 2). Providing airspace between the furniture and wall, or elevating items away and off the closet floor, will minimize this situation.
- Crawlspace floors and exterior vents should be sealed with appropriate materials, because clay or organic soils can potentially evaporate 12 or more gallons of water per 1,000 square-feet per day.
- If you experience immediate water damage, shop vacuum the area and increase the temperature and airflow to assist in thoroughly drying the area as quickly as possible. Do not wait to address the issue; water that remains stagnant for 24-48 hours will start to grow mold. Consider contacting a professional water remediation company.
- To clean up mold, use a strong soap and water solution. You will need both water AND soap because mold spores have a waxy surface that repels water. Soap works as a surfactant, reducing surface tension and thus allowing removal of the mold spores. Do not use bleach as it does not kill mold spores effectively on porous surfaces, and mold is an allergen whether it is dead or alive.

#### \*Mold Testing Considerations\*

Molds are fungi with at least 100,000 known species. Mold develops in ways & in areas which require specific training to deal with properly. Testing should provide real-time onsite diagnosis, include the use of tools such as microscopes and hydrometers, and include the obtainment of interior wall sampling, among other things. Be aware that “mailing off a sample” often does not guarantee a proper diagnosis. If you need to have mold testing done in your home, please **HIRE A PROFESSIONAL**. PHI does **NOT** perform mold testing because it requires a vast amount of specialized knowledge that is beyond the scope of home inspecting.

If you have questions, please contact **Environmental Initiatives:** [www.eimidwest.com](http://www.eimidwest.com)

### Need More Information?

Please visit [www.phiinspect.com](http://www.phiinspect.com), click our “Post Inspection Support” page, and request additional documents. You can also review our other newsletters such as “Energy Saving Methods and Materials” for insight on topics related to moisture and mold.

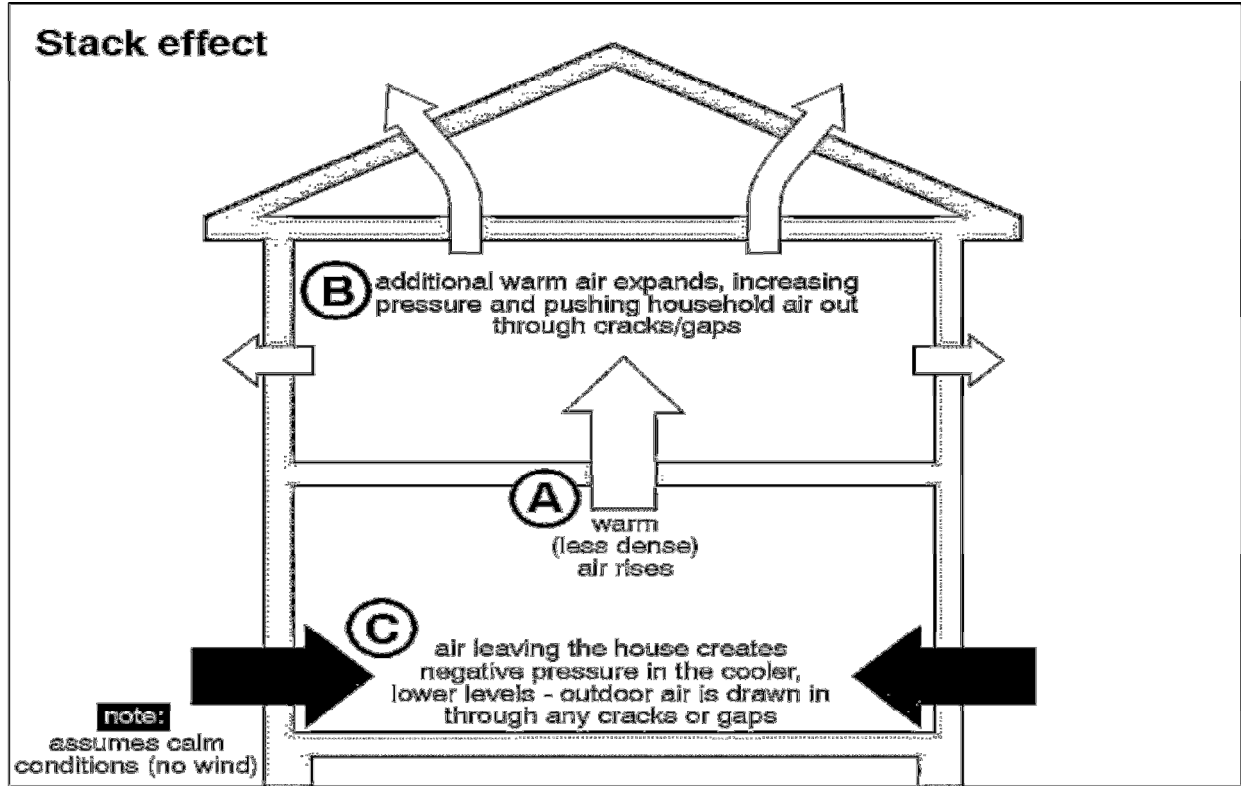


Figure 1

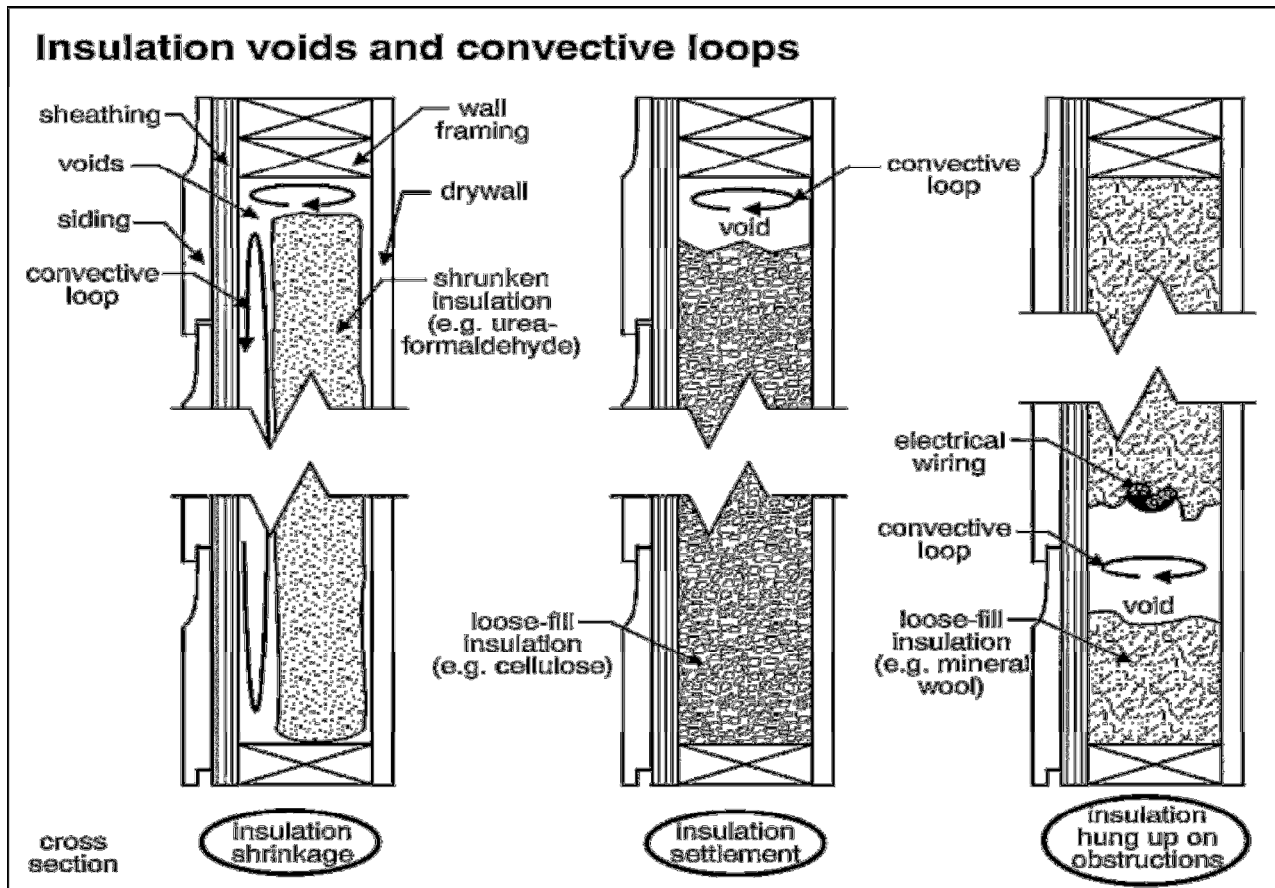


Figure 2