



## **HELPING YOUR BUYERS UNDERSTAND MOLD DURING THE BUILDING PROCESS**

### **Introduction**

The home building industry is certainly unique in the way that the end product is put together. A huge assortment of materials and trades people all make their way to an outdoor site where the final product—the house—takes shape. What's more, all of this activity takes place under the watchful eye of the customer, or homebuyer. Along with this exposure comes questions from buyers—a natural reaction considering the magnitude of the purchase. Buyers may wonder about the yard, the chimney, or the look of the façade—and these days—they may ask questions about mold.

Today's homebuyers have seen media stories on mold in their local papers, on network television, and even in publications like the *New York Times Magazine*. Most of these eye-catching stories tell of multi-million dollar court awards, families abandoning their moldy homes to live in hotels, and even homeowners burning down their houses for lack of any other way to be rid of the mold. While these stories are striking, they can hardly be considered representative of typical houses. Nevertheless, such reports are likely to cause anxiety in homebuyers and result in questions for builders during the construction process.

This ToolBase TechNote discusses what builders can do to help their buyers understand mold issues and how to deal with some potential problems during the construction process. Taking buyers' questions seriously and providing them with an honest representation of the facts and other information resources will help both builders and buyers. The topics covered include steps a builder can take at different points in the construction process as well as a few responses to frequently asked questions (FAQs) about mold.

### **Material Delivery**

Since mold can grow on construction materials like wood and drywall, the question of mold first arises when these materials show up on the site. At this phase of the process, a builder or his contractors can inspect material shipments like framing packages to ensure that they don't present a mold problem. Some builders and suppliers in the country have established formal agreements which specify how long a builder has to inspect a shipment, and what steps will be taken if a builder chooses to reject materials due to mold. This type of arrangement clearly assigns when and how certain steps should take place, and results in a process that can reduce the presence of mold on building materials.

If materials delivered to the site are found to be moldy but no formal agreement is in place, builders can discuss the shipment with their supplier or treat the mold-affected areas. APA, the Engineered Wood Association, recommends using either a commercial mold/mildew remover or a household bleach

solution<sup>1</sup>, while other groups like EPA<sup>2</sup> recommend the use of a detergent and water solution. In either case, use cleaning solutions in well ventilated areas and never combine bleach with ammonia for safety reasons.

Another issue to consider with material shipments is the timing of deliveries. While this seems like a simple matter and something that builders have always considered, minimizing the amount of time that moisture-sensitive materials (e.g., drywall) are stored on site can help head off potential mold problems.

## Material Storage

Once materials are on site, they're either used right away or stored for some period of time. If materials aren't being used in the construction immediately, they should be considered as stored materials and protected from the weather. This, too, may seem like an obvious practice, but given the awareness and sensitivity to mold that exists, it's worth reviewing storage practices.

Whenever it's possible, materials like wood framing should be stored under roof. Since this is often not feasible, the next best thing is to store materials with clearance above the ground to avoid wetting from storm runoff and permit air circulation from below. An example would be storing a stack of OSB on 3 lengths of scrap 4"x4" lumber (or paired 2"x4" lengths) to keep the material off the ground. This stack should also be covered with a tarp or plastic sheeting to protect the wood from rainwater. While the tarp should be weighted down on top to prevent it from blowing away, it should not be tight against the sides of the stack because this can reduce circulation and hold moisture inside the sheeting. One alternative is to stake the sides of the tarp off to the side of the stack.<sup>3</sup>

Storing materials in an area that is dry at the time but likely to get wet later is not recommended. Areas like basements that can be used for storage sometimes collect moisture from rainfall during the framing and rough-in stages. This exposure to moisture coupled with limited circulation can make these areas poor storage spots.

## Wetting During Construction

The next stage to think about is the actual construction of the house and how to deal with materials getting wet as the structure goes up. By the very nature of the process, houses can get wet as they're built. The wetting of some materials like framing can be extremely difficult to avoid, so it's worth thinking about how to deal with this contingency.

Reasonable amounts of wetting can be endured by framing, which will simply dry out again once outdoor conditions allow. It's wise to allow for a suitable amount of drying time following wetness before "closing in" building components. Closing in is considered the point at which components are covered up with additional materials that restrict their ability to dry.

Given typical sequencing of work at a site, this shouldn't be a problem. For instance, a building may be exposed to several days of rain during the framing stage, resulting in moisture uptake of wood members like wall studs. However, as a typical construction sequence would progress, the house would be put under roof, sheathed, sided, and roughed-in (mechanicals) before the studs would be covered up with insulation and drywall (e.g. closed in). This would permit at least a few weeks to dry. What's more, the

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<sup>1</sup> Build a Better Home – Mold and Mildew. APA – The Engineered Wood Association, 2001.

<sup>2</sup> United States Environmental Protection Agency. <http://www.epa.gov/iaq/pubs/moldresources.html>

<sup>3</sup> Builder Tips – Storage and Handling of APA Trademarked Panels. APA – The Engineered Wood Association, 2000.

studs would not be exposed to further wetting from rain once the house was under roof, sheathed, and sided. At this stage, the interiors of homes are protected from bulk water and moisture-sensitive components like drywall, insulation, and finish products can be installed.

This sounds easy enough—but since there are limitless circumstances and situations in the real world—just keep in mind that work should be sequenced to protect moisture-sensitive materials and that wet building components need a chance to dry before close in.

This covers what to do about wetting and drying, but what if some mold growth develops after a rainy period? This is when it's important to communicate rational and accurate information to buyers. First of all, mold growth of this sort that arises after short-term wetting will not compromise the structural integrity of framing. Second, it can be cleaned off or treated if this is deemed necessary by using the steps mentioned above.

## Occupancy

Once the house is finished and occupied there are still lots of things that can be done to control moisture and prevent mold. In addition to the list of maintenance items a homebuyer should consider over the long term, there are particular issues that often face new homeowners immediately that can play a part in managing moisture and mold. Items that builders can point out and discuss with their buyers include:

- How to operate the HVAC equipment, including any humidification or dehumidification equipment
- When to operate exhaust fans in kitchens and bathrooms
- What the sump pump does and how it should operate
- How to control indoor humidity levels and protect features like wood flooring
- The importance of maintaining gutters and using splashblocks or corrugated piping to channel rainwater away from the foundation
- The correct use and operation of lawn sprinkler systems (i.e., don't water the house)
- Recommendations on plantings and gardens near the foundation
- Guidance on the use of pressure-washing equipment to clean house exteriors
- Instructions on the location and purpose of water valves within the home
- The importance of prompt action to deal with water leaks
- Clues to identifying leaks like blistering paint, musty odors, or discolored drywall

Covering these topics with homebuyers can help both parties and result in a home that performs well in terms of moisture control.

## Frequently Asked Questions

Finally, in addition to these steps that a builder can perform, a little background knowledge on some FAQs can go a long way in helping buyers understand mold and its impact on homeowners. The questions below are based upon hundreds of inquiries to the ToolBase Hotline and discussions with builders around the country. The responses are designed to allow a builder to provide honest and rational information on each topic that will help buyers understand the issue.

### **“Can't mold make my family sick?”**

The general consensus in the medical community is that mold can indeed act as an allergen and cause hay fever-like symptoms. Like other allergies, different people will react differently to the same

exposure. Mold can also trigger asthma attacks in people that have asthma. In people with compromised immune systems, it can also cause active fungal infections. Other health effects like neurological problems haven't been proven. There are thousands of different kinds of mold and very limited research into how these affect people. It is important to keep in mind that mold has been around people for thousands of years.

**“If my framing gets moldy, doesn't that mean it's not strong enough anymore?”**

No. Framing lumber that grows surface mold from short-term wetting is not structurally compromised. Conditions that allow mold to persist for long periods, however, are the same conditions that can lead to rot and other wood decay mechanisms, so long-term mold growth can be viewed as a warning for other problems.

**“Shouldn't I test to make sure my house is free of mold?”**

No. Testing for mold is difficult because mold is everywhere, so you certainly won't prove that your house is free of mold. There are also no limits or standards that test results can be referenced against to show that a house has “too much” mold. Interpreting test results can also be very difficult and testing is often expensive. A thorough inspection of a house, looking for signs of moisture problems or active mold growth, is a more effective way to size up potential problems than testing.

**“Isn't mold happening now because buildings are too tight?”**

This rationale for moisture/mold problems is often presented by the media as the main driving force for the current rash of moisture/mold claims. However, mold needs moisture to grow and moisture can come from lots of sources in a house, many of which have nothing to do with the amount of fresh air exchange a building experiences. A chronic plumbing leak releasing water onto drywall or a leaky foundation wall are a couple of examples. There can indeed be cases where the humidity level in a house would be lower with more fresh air, potentially alleviating some moisture/mold problems—but to characterize this as the root cause of mold problems is incorrect.

## **Additional Resources**

The NAHB Research Center's technical paper, “Mold in Residential Buildings,” serves as a primer on mold and can assist with answering additional questions encountered by homebuyers. In addition, the TechAssist Hotline staff of researchers and engineers is available to answer questions about mold.

TechAssist Hotline – (888) 624-2636



NAHB Research Center's ToolBase Services, in cooperation with the Partnership for Advancing Technology in Housing (PATH), make this information possible. ToolBase is the housing industry's resource for technical information on building products, materials, new technologies, business management, and housing systems. Information is disseminated through a technical hotline (800-898-2842), newsletter, website (<http://www.toolbase.org>), industry roundtables, and educational programs.

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