



WHAT IS THAT ???

## *It's Stachybotrys*

Although we are typically cautious while performing building inspections, occasionally we tend to relax and not always think about what may be going on inside a building. A recent inspection brings home the importance of being cautious during field investigations. The building is an old jail it had been closed up and unoccupied for five years. The roof had been leaking for years and some flooding had occurred in the lower level during major rain actives. During our inspection of suspect building materials Ron collected a sampled of drywall and joint compound from the lower level. When the sample was analyzed utilizing Polarized Light Microscopy the lab tech noticed an unusual mold type structure within the sample material. ***It is times like these we are thankful we utilize a nationally recognized laboratory with an excellent track record.*** The lab tech, whom we have known for years, took it upon herself to further investigate and she determined this mold to be Stachybotrys.

### *So what is Stachybotrys ?*

Stachybotrys is a type of slow growing saprophytic fungus (mold) that grows well on materials that have a high cellulose concentration. It has a high moisture requirement, so it grows where moisture has accumulated from roof or wall leaks, or chronically wet areas of plumbing leaks. Almost without exception an extended saturation time and/or consistently high levels of humidity are required for this fungi to proliferate. Because often times leaks can occur behind walls and in covered ceiling areas, the fungus may grow profusely, but not be readily visible. This mold has a very low nitrogen requirement and can grow on water-saturated cellulosic materials such as drywall, wallpaper, ceiling tiles, insulation material (especially cellulose-based insulation), carpets (especially the jute backing), wood-derived building materials and even general debris.

In sharp contrast, single or sudden water damage events that occur where drying of water damaged material takes place more quickly tend to support growth of more xerophilic such as Peicllium and Aspergillus species.

### *Where is Stachybotrys found ?*

There are about 15 species of Stachybotrys, with a world wide distribution. Stachybotrys are common in the western states. They grow in areas where the relative humidity is above 55%. Stachybotrys can bee found in areas hit by flooding.

### *What does Stachybotrys look like ?*

Recognizing that Stachybotrys requires constant moisture and cellulose for growth helps the inspector narrow down potential sources. Because of these factors, a visual inspection of the subject building is the best method of identifying a potential Stachybotrys contamination problem and requires a trained eye. Stachybotrys typically appears as a sooty black fungus occasionally accompanied by a thick mass of white mycelia. Bulk or surface sampling of suspect materials should

be conducted using caution and removed to the laboratory for identification by light microscopy. *Stachybotrys* mycelial mats are generally pigmented dark olive-gray and appear to be a slimy mass, with smooth margins and may have either a smooth or ridged surface. The spores are more brownish in color. When the growth sporulates, the colony may appear to have a powdery surface. As a general rule, air sampling for *Stachybotrys* yields unpredictable results because of a number of factors. First, when significant *Stachybotrys* contamination is present, other fungal contaminants will tend to overwhelm the *Stachybotrys* spores in culture, due to their more rapid growth rate, even when using selective media such as cellulose agar. In addition, most commonly encountered fungal spores such as those of *Aspergillus* and *Penicillium* tend to be more easily aerosolized than *Stachybotrys* thus further amplifying the recovery of the less significant contaminants. Typically under active growth conditions, the spores of *Stachybotrys* adhere to one another in a sticky sack, making passive aerosolization even more difficult. However, once a *Stachybotrys* contaminated surface has dried for an extended period of time the sticky sack desiccates and the spores are released much more readily. (Note: fungi cannot be identified by their visual appearance of the mycelial mat. Identification requires examination of the fungal spores under a microscope.)

### ***How does Stachybotrys cause disease ?***

The presence of *Stachybotrys* fungi in buildings is significant because of the mold's ability to produce mycotoxins, metabolites of fungi that can cause adverse effects in humans and animals. Although most molds produce mycotoxins, those produced by *Stachybotrys* are extremely toxic, are suspected carcinogens and are immunosuppressive. Exposure to these toxins can occur through inhalation, ingestion or dermal exposure. Symptoms of exposure to *Stachybotrys* toxins include dermatitis, cough, rhinitis, nose bleeds, cold and flu symptoms, headache, general malaise and fever. These symptoms are indicative of those who have been exposed to *Stachybotrys*, a mold so potent that a doctor in Ohio has linked it to the deaths of ten infants. A pediatric pulmonary specialist in Cleveland, discovered the relationship between the infants and the mold after a rash of bleeding lung cases following Ohio's spring floods in 1994. Much of what is known about stachybotrystoxicosis has been gleaned from observation of exposed livestock. Animals exposed to high levels through ingestion of contaminated forage die rapidly due to massive hemorrhaging, both internal and external. Exposure to lower levels over time leads to severe immune system suppression since afflicted animals often suffer from septicemia and succumb to a number of opportunistic infections.