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Monthly Newsletter

This is the 7th installment of our newsletter. Here we discuss the current state of Chinese drywall, analytical methods for Chinese drywall, and the final installment of the Kingdom of Fungi.

-Edward A. Sobek, Ph.D., President/Lab Director

Current State of Chinese Drywall

By Brad Russell

AssuredBio recently attended a Chinese Drywall Litigation Conference in Florida to learn more about the state of the problem and promote our analyses. More is being learned about the issue every day, but there are still far more questions than answers.

Chinese drywall is believed to be in 41 states and is verified to be in 13, with enough imported to be in parts of hundreds of thousands of homes. Over 550 million pounds of Chinese drywall was imported since 2006, with most being imported in Florida, Virginia, and California. Homes built as early as 2001 have been found to have Chinese drywall in them. The drywall was manufactured in six factories in China by five major companies, the most important of which is Knauf.

Chinese drywall is defective and contains contaminants and impurities. The drywall off-gasses sulfide and disulfide compounds, including hydrogen sulfide, strontium sulfide, and carbon disulfide. These gases corrode copper and other metals, quickly deteriorating HVAC coils, refrigerators, and copper wiring in homes. Corroded metals turn black and pit. The gases sometimes smell of rotten eggs or used fireworks.

The health effects of Chinese drywall are not nown. However, the contaminants known to be in the drywall are known to cause headaches, nosebleeds, dizziness, and upper respiratory issues. Homeowners with Chinese drywall reported these symptoms long before the drywall problem was known. Health symptoms subside after victims are removed from the environment, but it is not known whether sensitivities similar to mold develop.

People suspecting a Chinese drywall problem should take quick action. First, a visual inspection of the home should be completed. Look for corroded copper and for foul odors. If Chinese drywall is suspected, the home builder should be contacted to see if he is taking any action to remedy the issue. If not or if the builder doesn't believe there is a Chinese drywall issue, evidence will be required.

To confirm the presence of Chinese drywall, laboratory analysis must be performed. Air testing is not a valid method and no non-destructive or in-home tests currently exist that are valid. AssuredBio offers the least expensive valid test, which only requires a 2" by 2" sample. A representative set of samples should be taken from the home, as most homes are only partly built with Chinese drywall. Typically 4-6 samples are taken from a 2,500 sq. ft. home.

Once a home is verified to contain contaminated Chinese drywall an attorney should be contacted. Several individual lawsuits are underway, but momentum for class action and MDL (Multi-District Litigation) is growing. If the homeowner has the means and is experiencing health issues, it is suggested that they move to another residence until the effects are known.

A couple myths about Chinese drywall exist. Not all Chinese drywall is contaminated. Additionally, American drywall tested positive in our lab and other labs. The likely cause is recycling of drywall as large buildings are torn down. Recycling drywall is done for the same reason Chinese drywall was imported at all – demand larger than domestic supply.

AssuredBio offers two contaminated Chinese drywall analyses: Fourier Transform Infrared Spectroscopy (FT-IR) and our Corrosion Test. Both may be used in litigation. For more information on either analysis or Chinese drywall in general, please call the lab or send us an email at info@assuredbio.com.

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The Kingdom of Fungi Part 3: The Zygomycetes

By Lyn Pope

On this third and final stop on our tour of the kingdom of fungi we examine the Zygomycetes. These organisms are found all over the world in all kinds of environments. Most are not pathogenic to humans. They normally feed on dead or decaying plant and animal material; however a few species of Zygomycetes are parasitic, or found living at the expense of another organism. Other species may be symbiotic, living with another organism in mutual benefit.

One of the most notorious of fungi is included in this phylum. It is *Rhizopus stolonifer*, the common "black bread mold". This organism spreads over the surface of bread and buries its hyphae deep into the surface in order to absorb nutrients. Another popular Zygomycete is *Rhizopus oryzae*, which is used to make

sake - the rice wine of Asia. Other members of this phylum are: *Absidia, Apophysomyces, Cokeromyces, Cunninghamella, Mucor, Rhizomucor, Saksenaea, Syncephalastrum, Mortierella, Basidiobolus,* and *Conidiobolus.*

Unlike Basidiomycetes and Ascomycetes, Zygomycetes often lack septated mycelia. Septa are formed mainly for the removal of old or damaged hyphae. Some other unique characteristics are related to their mechanism of reproduction. Like Basidiomycetes and Ascomycetes, Zygomycetes may reproduce sexually or asexually. Sexual reproduction is done through the use of hapliod mating hyphae, from which zygospores are formed.

Even though the sexual method of reproduction obviously contributed to the name of the phylum, most Zygomycetes utilize asexual means for their reproduction. This is done in stalked sporangia which hold numerous spores.

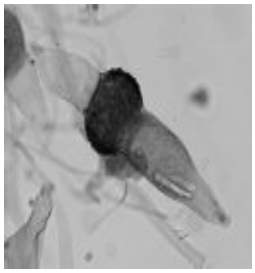

Fig. 1 Zygospore

Fig, 2 Sporangia

Fungi included in this category disperse their spores similar to Ascomycetes and Basidiomycetes. Transmission can be done by wet or dry. That means they have the ability to use both air currents and water droplets. Other methods include mechanical transport, such as movement while settled on the fur of animals. Spores from Zygomycetes are often quite large so they settle on surfaces quite easily. For this reason they normally are not collected at high concentrations in air samples, but never doubt their presence in the home.

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Chinese Drywall Analytical Methods
By Ed Sobek, Ph.D.

I recently attended the Chinese Drywall Conference in Orlando FL. The conference was packed and I learned a great deal about the litigation landscape that is shaping up in the courts. However, I was disappointed by the dearth of information presented on the analytical detection methods and the lack of progress towards diagnosing defective drywall. The scientific presentations were more focused on identifying origins of the defective drywall rather than what I believe is more important: identifying defective drywall. I am always seeking best analytic methods to provide AssuredBio's clients with assays that provide the highest degree of discrimination.

To date, AssuredBio has the largest database of samples analyzed using FTIR and corrosion testing. We ran hundreds of samples, while the State of Florida has only analyzed 15 samples through their outsourced laboratories. Moreover, Florida spent a fortune doing it. What do they have to show? That strontium is often 10 fold higher in defective Chinese drywall; however that is not always the case. Some American drywall falls in the middle, which makes it really hard to believe that discriminating defective drywall on strontium concentration alone, is ever going to be feasible.

With FTIR we see the fingerprint of the chemical composition of the drywall. It is all based on the principle of molecular vibrational energy of chemical bonds. Plus it has been around for nearly half a century. Hence, FTIR is a proven technology and used in crime labs, pharmaceutical and FBI labs across the country. If the drywall is defective it shows up in the fingerprint or FTIR spectrum. We back this up with > 98% correlation with corrosion testing. By coupling FTIR with corrosion testing we provide our clients with an extremely powerful line of evidence that points to defective drywall. A colleague, who is a scientist with the FBI, is required to present at least six lines of evidence to bring a case before the courts. Of course he works in the field of clandestine graves, which is much more serious than defective Chinese drywall, but it drives home the point that the more evidence the better ones chances are in court.

On the next page I included FTIR fingerprints of defective and non-defective drywall, plus corrosion test results. Decide for yourself how compelling the data is.

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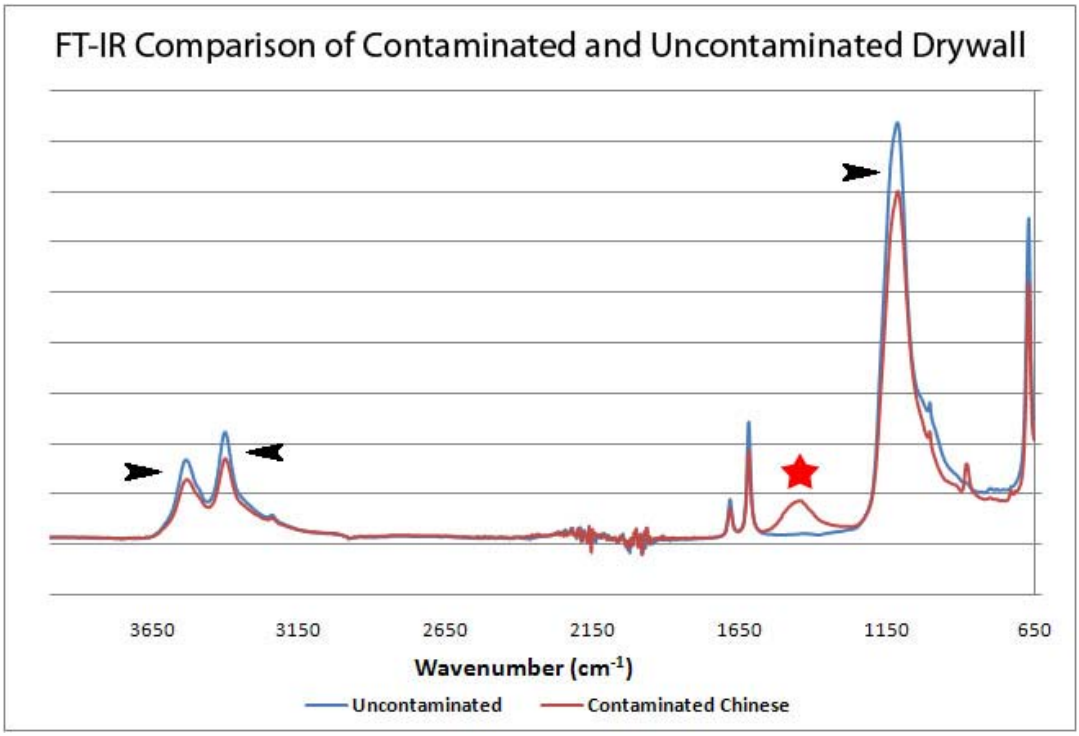

Above are the fingerprints of contaminated Chinese drywall and uncontaminated American drywall. Notice the peak noted by the star in the contaminated drywall that does not exist in the uncontaminated drywall's fingerprint. Also note the gypsum peaks, noted by black arrows, are not as tall for contaminated drywall.

Below are copper coupons after 7 days in AssuredBio's corrosion test. The coupon on the left was placed with contaminated Chinese drywall and the coupon on the right was placed with uncontaminated American drywall.