

Fuzzy dock posts

Recent reports of decaying wood pilings in Palm Coast (and other parts of the state) have many homeowners concerned about how to protect their docks. The reports have also triggered a flurry of e-mails among extension faculty in an attempt to identify a cause (and possible solution) for the problem. The reported decay is seen as “fuzziness” on the surface of the wood, usually starting where a piling abuts decking or a bulkhead. The fuzziness is often just on one side of the piling, and often only affects a small number of pilings, and not the entire dock. The fuzziness is reddish-brown in color, in contrast with the greenish color of the piling (which has been treated with a copper-based preservative.) The wood beneath the fuzzy layer may be peeling off in thin layers (delaminating.)

An article written by researchers from the US Department of Agriculture’s Forest Service Forest Products Laboratory in 1992 provides insight into the probable cause of this “decay.” In order to understand the article, it is important to know a little bit about wood anatomy. Most of us are familiar with the dark and light bands seen in a cross section of a tree or branch. The dark bands are dense layers of cells, typically formed during winter months, and referred to as “latewood.” The lighter bands are usually wider than the dark bands, and are typically formed during summer months. These light bands are referred to as “earlywood.” In some trees, including pines, special tube-like cells called tracheids are used to transport water and nutrients from the roots to the leaves. These tracheid cells have perforated ends, and have the compounds cellulose and lignin in their cell walls. The cellulose and lignin provide support for the cells, and are woody in texture. Tracheids are found in both earlywood and latewood, but the cell walls of latewood tracheids are thicker than the cell walls of earlywood tracheids.

The fuzziness we are seeing on dock pilings and deck boards is most likely the result of tracheid separation as a result of salt water evaporation. Salt water from the canals gets into the dock woods either through capillary action up the tracheids, or as spray (from boat traffic or simply wind.) In areas of the wood exposed to sun (primarily south and west-facing sections of pilings), the water evaporates, leaving behind salt crystals within these tracheid cells. Over time, the salt crystals cause the tracheid cells to become brittle, and they separate from the rest of the wood, in thread-like strands, which are seen as fuzziness on the outside of the piling. This fuzziness is reddish-brown, in contrast to the greenish color of the piling’s outer surface. From the USDA report, “this phenomenon is particularly common in the first 1 to 2 feet above the high water line of marine piling treated with chromated copper arsenate (CCA).” Latewood tracheids seem to be more affected than earlywood tracheids.

You may be wondering how this can happen in pressure-treated wood. It is important to realize that these same tracheid structures are essential for the pressure-treatment process. Wood that is to be used in submerged salt or brackish water applications (e.g. dock pilings) is generally treated with chromated copper arsenate (CCA) at a rate of 2.5 lbs/cubic foot. It is the copper which gives the wood its greenish color. The CCA enters the wood largely through tracheids, and for an 8-inch piling, should penetrate a couple of inches into the wood. Marine-grade wood is not only treated with 2.5 lbs/cubic foot of CCA, but must meet other criteria—for example, pilings that do not abut a bulkhead may not have any exposed heartwood. Heartwood is very dense, and will not take up the CCA, which leaves it prone to decay by marine organisms like

shipworms, which bore into the wood. The pressure treatment process does not clog up the tracheids, so liquids can continue to enter the wood through the tracheids. By contrast, creosote does clog the tracheids. Creosote is the tar-like treatment often seen at the base of utility poles.

The good news about this salt water evaporation is that, while it is alarming in appearance, it is not likely to affect the lifespan/serviceability of marine pilings. The expected lifespan of true marine-grade pilings is about 25-30 years, while that of non marine-grade pilings treated with 2.5 lbs/cubic foot of CCA is about 15-20 years. For dock owners who are really concerned about the appearance of their pilings, tracheid separation can be prevented by using methods that either prevent capillary flow up the piling, or prevent drying of the post, such as coating or wrapping the posts. Pile tops tend to degrade most rapidly, because water puddles on the top of posts, and caps can be used to prevent this degradation.

The many wood products specialists that I have contacted about the Palm Coast docks all agree that the problem is not being caused by a fungus. While fungal cells have been found in some wood samples, this is not unexpected for wood from a dock. Fungi like to grow in moist, oxygen-rich environments, however there are many different types of fungi, and not all are decay-causing. Many molds and mildews can grow on pressure-treated wood, but they are not going to cause structural failure of the wood. Decay-causing fungi give affected wood a characteristic appearance. Dr. Tor Schultz, wood products specialist at Mississippi State University explained, "For a treated piling that was being attacked by decay fungi, I would expect not to see a fibrous mat, but rather a cracked "checkboard" surface appearance somewhat like the wood had been exposed to fire."

Homeowners who are planning to have a dock built or repaired should be sure to request that their dock builder use marine grade lumber, to ensure the longest lifespan of the structure. It is also a good idea to ask the builder for the name of the company supplying the wood, and, if possible, to get a label from the wood itself for future reference. Some of the wood specialists I have talked to have expressed concern that the pilings that they have seen photographs of do not appear to have as much CCA penetration as they would expect for marine pilings. It is always a good idea for customers to obtain as much knowledge and information as they can before contracting for any item, including a dock!

For more information about this or other coastal topics, contact Maia McGuire, UF/IFAS Sea Grant Extension Agent at the Flagler County Extension Office at 386-437-7464 or e-mail mpmcg@ufl.edu. Extension programs are open to all persons without regard to race, color, sex, age, disability, religion, or national origin.