Simplified History of Preservative-Treated Wood

To use our wood (Southern Pine) at or near the ground, it must be stuffed with chemicals that resist mold, fungus and termites.

But...the better the protection, the more and nastier the chemical. Dilemma.

Consumers, builders and engineers have yearned for a one-size fits all solution: rot-proof, non-fastener-corrosive and non-toxic.

1836 – Coal Tar Creosote Patented for Railroad Ties.
Lasted forever, later found toxic.

1938 – CCA (Chromated Copper Arsenate) Patented for wood preservation.
Lasted forever, later found toxic.

2003 – Lumber industry "voluntarily" stops making CCA, and ACQ (Alkaline Copper Quaternary) emerges as greener replacement.

2007 – Studies show that ACQ corrodes fasteners five times faster because of the increased copper ratio, so its use becomes impractical for structural applications: fasteners must be stainless, and even HARDWARE must be stainless, since galvanized actually corrodes faster than regular steel with this one.

Figure 1. Many new wood treatment chemicals are more corrosive than the old CCA. Hardware that once could be depended on to last for decades now may degrade in only a few years.

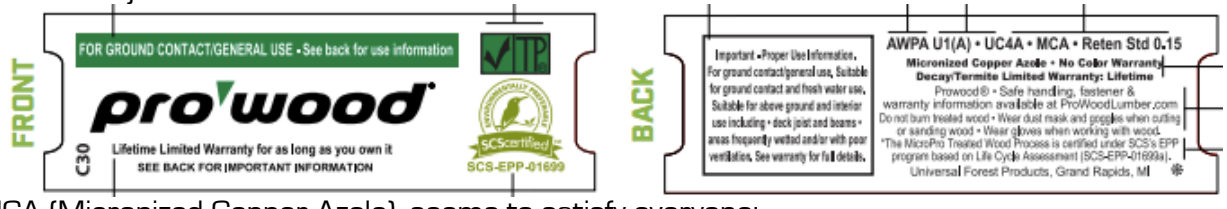
In fact, our arsenic-laden friend CCA is still allowed for permanent wood foundations for this reason.

2008 - Manufacturers and scientists run a bunch of accelerated corrosion tests on different preservatives, but the results are inconclusive, specific to test methods, etc. Extrapolation seems riskier than true long-term exposure, so engineers aren't convinced.

One of the chemicals tested in 2008 was MCQ, (Micronized Copper Quaternary), which needed tweaks on the corrosion front, but showed the potential of itty-bitty copper ("micronized") to get into wood but not on kids' hands.

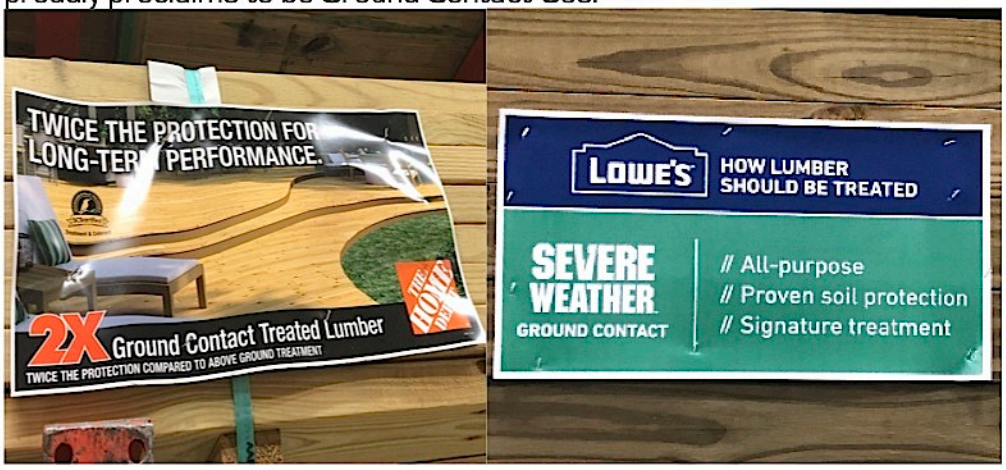
2014 – EPA Publishes "Release of Micronized Copper Particles from Pressure-Treated Wood Products" giving it a thumbs up for safety.

2016 – AWPA (American Wood Products Association) releases guidelines for retention levels of different preservatives and wood categories (above ground/ground contact etc).



MCA (Micronized Copper Azole), seems to satisfy everyone:
-non-corrosive to fasteners (can be used with steel, galva, stainless, aluminum, etc)
-requires less chemical to hit UC4A (Ground Contact) Retention (.15 lb/f ^{3})
-rot-resistant enough to offer a lifetime warranty
-non-toxic enough to have a green picture of a bird on it.

2018 – From one day to the next, all the treated wood at Home Depot and Lowes proudly proclaims to be Ground Contact Use:



This elegantly coincides with the AWPA requiring more wood applications to be Ground Contact:

At last, a product good enough for kids to crawl around on (#15) and live in water (#20)

It's no mystery that above-ground treated lumber also vanished from Home Depot the same day.

Why this is perfect for the model Cold-Form-Cargo structure at 2110 Southgate

The foundation at 2110 Southgate is made of pre-cast concrete, also called bunker blocks, on rubble-stone footings. These have been tested to a total capacity of 100,000 lbs.

But, this doesn't do justice to the true capacity of the foundation, since rock footings become stronger with increasing weight, and the chance for differential settlement decreases exponentially with pre-loading.

Because the foundation has been proof-compacted, the perimeter curtain wall becomes structurally redundant, and because the structure will once again be load-tested upon completion, it's not necessary to test the perimeter soil.

With the curtain wall, as with the bunker blocks, there is the opportunity to have a free-draining base of crushed concrete, but without hitting the typical snags of engineered fill (soil verification regardless, installation in thin layers, and compaction).

This in addition to the thermal benefits described separately of the monolithic cellulose blanket, see (Insulation Innovation).

The exterior will be cladded continuously with fiber-cement siding sheets, but the foundation line will be demarcated with a horizontal trim board and coated with fiber-reinforced cement beneath it, so it will appear perfectly conventional from the outside.

So even though the new MCA-treated wood is guaranteed for a lifetime as a freshwater dock post, at Southgate, it will sit on a foam base plate, shielded with black plastic, which sits on a free-draining mound of crushed concrete, and backfilled with the same material used for the load tests.