

Designing a Healthier Healthcare Facility

By Warren Bartel

The U.S. Environmental Protection Agency this spring approved the registration of naturally antimicrobial copper alloys as a supplement to standard preventative measures in eliminating specific disease-causing bacteria. Independent lab tests confirmed that copper alloys eliminate more than 99.9 percent of bacterial contamination within two hours of exposure. Copper, brass and bronze products have proven particularly effective against *Staphylococcus aureus*, *Enterobacter aerogenes*, methicillin-resistant *Staphylococcus aureus*, *Escherichia coli* O157:H7 and *Pseudomonas aeruginosa*.

Copper and copper alloys are the first-ever solid material to be granted approval

from the EPA for designation as an antimicrobial agent. Copper, brass and bronze products can be used to replace various touch surfaces as a supplement to existing CDC-prescribed hand-washing and disinfecting regimens, leading to a reduction in the spread of infection throughout a healthcare facility.

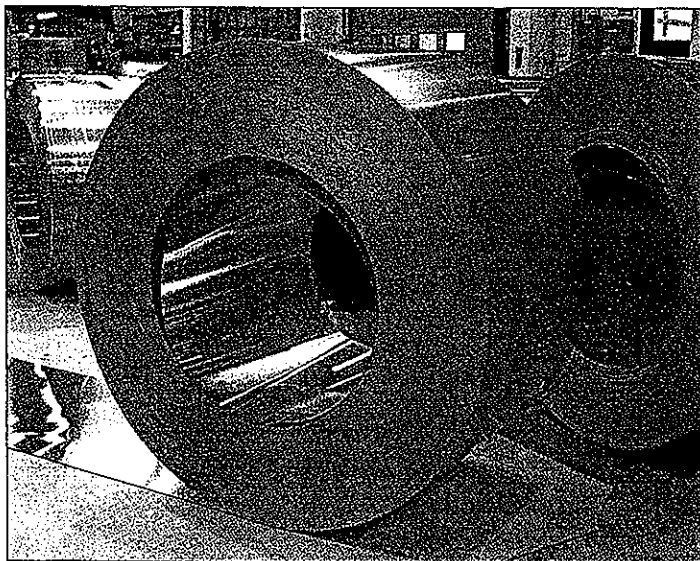
This is big news for healthcare organizations. According to the Centers for Disease Control and Prevention, so-called superbugs such as MRSA remain a serious problem, with hospital-acquired infections affecting nearly 2 million people and causing approximately 100,000 deaths each year. With Medicare refusing to pay for preventable infections and private insurers not far behind, hospital-

acquired infections are costing the healthcare industry about \$30 billion a year.

Performance

Copper and copper alloys are durable. Antimicrobial coatings are fragile and can erode over time, while alternative materials, such as stainless steel, possess no antimicrobial properties and must be constantly sanitized with chemicals and sprays. The intrinsic antimicrobial properties of copper, brass and bronze last the lifetime of the metal.

Aside from the obvious antimicrobial characteristics of copper, there are several additional benefits that make the metal well suited for interior design. Uncoated copper, brass and bronze surfaces are aesthetically appeal-



Healthcare Facility Applications

Where can copper be used to prevent the spread of infection? Upon entering a hospital, copper can be used on doorway touch surfaces, including knobs, pulls and handles. Once inside, copper can be used on railings in hallways and stairwells in addition to faucets, sinks, showerheads and

grab bars in bathrooms. Nonstructural applications include hospital carts, IV poles, trays, bedpans, bedrails and call-buttons, to list a few. In addition, the EPA has approved copper for use in floor tiles, nonporous ceiling tiles and wall tiles.

Future Applications

The benefits of copper and copper alloys may expand beyond touch surfaces. Looking toward future applications, prelim-

inary testing has proven copper effective against other harmful fungal and microbial organisms, including *Aspergillus niger* (black mold), influenza A and *Legionella pneumophila*. With this in mind and funded by the U.S. Department of Defense, test trials are currently under way at Memorial Sloan-Kettering Cancer Center, the Medical University of South Carolina and the Ralph H. Johnson VA Medical Center. The results of these tests will determine the efficacy of copper in additional applications, expanding the usefulness of copper in healthcare facility design.

With its newly acquired EPA-granted status and proven efficacy as an antimicrobial agent, copper is an ideal material for use on various touch surfaces in healthcare facilities. The initial material investment pays for itself through reduced hospital-acquired infections – an expense shouldered not by Medicaid but the healthcare facility itself. Copper provides healthcare facility managers, architects and designers the opportunity to benefit the health and safety of a facility's patients. FE

ing and available in a wide range of colors and finishes. While aging might eventually become an aesthetic issue with pure copper, darkening due to oxidation does not occur in many copper alloys. (Note: An alloy must be at least 65 percent copper in order to meet the EPA standards in combating the spread of infection.) Last, but not least, copper is easily recyclable and dovetails with the industry-wide push toward sustainable design and construction.

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