Properties Of Copper

Antimicrobial copper can be an effective ally in healthcare's battle against infections

April 4, 2012

In a brief conversation with Surgical Products the Copper Development Association talks about Antimicrobial Copper and what it means for the healthcare industry.

SP: What is antimicrobial copper and how does it work?

CDA: Antimicrobial Copper is the most effective antimicrobial touch surface material. It’s a family of copper based metals that kill bacteria* that cause infections and the only class of solid materials registered with the Environmental Protection Agency as antimicrobial public health products. Previously, only sprays, liquids, concentrated powders, and gases were classified as such.

The mechanism by which copper kills bacteria is the subject of ongoing research. Several theories have been proven, others are being investigated. One theory states that copper surfaces kill bacteria in two sequential steps: the first step is a direct interaction between the surface and the bacterial outer membrane, causing it to rupture. The second step is related to the holes in the outer membrane, through which the cell loses vital nutrients and water, causing a general weakening of the cell. In addition, copper ions released from the copper surface can penetrate the cell uninhibitedly. This puts several vital processes inside the cell in danger; copper literally overwhelms the inside of the cell and obstructs cell metabolism. By “metabolism” we mean all the biochemical reactions needed for life. These reactions are accomplished and catalyzed by enzymes, and when excess copper binds to these enzymes, their activity grinds to a halt. The bacterium can no longer “breathe,” “eat,” or “digest.”

SP: What is copper typically used for in the healthcare industry?

Drawer pulls made with Antimicrobial Copper

CDA: Antimicrobial Copper should be used for products that are frequently touched and serve as a source for cross-contamination of bacteria. Any product that can be manufactured from metal can be made from Antimicrobial Copper. Examples include IV poles, bed rails, tray tables, counters, door hardware, carts, and various types of handles. Typical uses include the aforementioned plus work spaces, table tops, sinks, faucets, hand rails, grab bars, and push plates.

SP: Why should people in the healthcare industry use copper?

CDA: Antimicrobial Copper surfaces kill the bacteria that cause infections. According to the U.S. Centers for Disease Control and Prevention (CDC), each year, 2 million people contract a hospital-acquired infection (HAI); of those 1 out of 20 die, or approximately 100,000. HAI's kill more people each year than HIV and breast cancer combined. The CDC recommends frequent hand-washing and good hygienic practices as the best lines of defense against the transfer of the disease-causing bacteria that ultimately lead to infections. However, these practices rely on human effort and are thus subject to omission or sub-optimal execution. Using Antimicrobial Copper surfaces is a passive method to kill bacteria continuously on surfaces between routine cleaning. The use of Antimicrobial Copper surfaces can supplement good hygienic practices.

SP: What are the physical properties and characteristics of copper?

CDA: Antimicrobial Copper is a family of copper based metals (or alloys). It is not a

coating. The antimicrobial activity is inherent to the metal and will never wear away. Over 300 different copper alloys are registered with the EPA as antimicrobial. Each has a unique set of mechanical and fabrication properties. They can be formed into a wide assortment of products.

SP: How does one properly use and care for copper?

CDA: Antimicrobial copper surfaces cannot be coated in any way. The metal must remain exposed and allowed to make contact with the bacteria. Visible dirt and filth should be removed. Surfaces should be cleaned at their normal frequency. Cleaning agents typically used for traditional touch surfaces are permissible; the appropriate cleaning agent depends on the type of soiling and the measure of sanitization required. In addition, copper cleaners are available from local retailers that can restore the luster and shine that is lost over time. If copper cleaners are used, one must ensure that they do not leave residual coatings on the surface.

SP: What sorts of finishes and colors does copper come in?

CDA: From gold, to soft pink, to soft lavender, to silver, to colors that resemble stainless steel, and many colors in between, Antimicrobial Copper alloys are available in a wide range of attractive natural colors. A wide variety of surface textures can be obtained through mechanical treatments to Antimicrobial Copper alloys. Common finishes include satin, matte, and brushed. Antimicrobial Copper surfaces cannot be coated in any way.

For more information, visit www.antimicrobialcopper.com [1].

* *Laboratory testing shows that, when cleaned regularly, Antimicrobial Copper kills greater than 99.9 percent of the following bacteria within 2 hours of exposure: VRE, MRSA,Staphylococcus aureus, Enterobacter aerogenes,Pseudomonas aeruginosa, and E. coli O157:H7. Antimicrobial Copper surfaces are a supplement to and not a substitute for standard infection control practices and have been shown to reduce microbial contamination, but do not necessarily prevent cross contamination; users must continue to follow all current infection control practices.*

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