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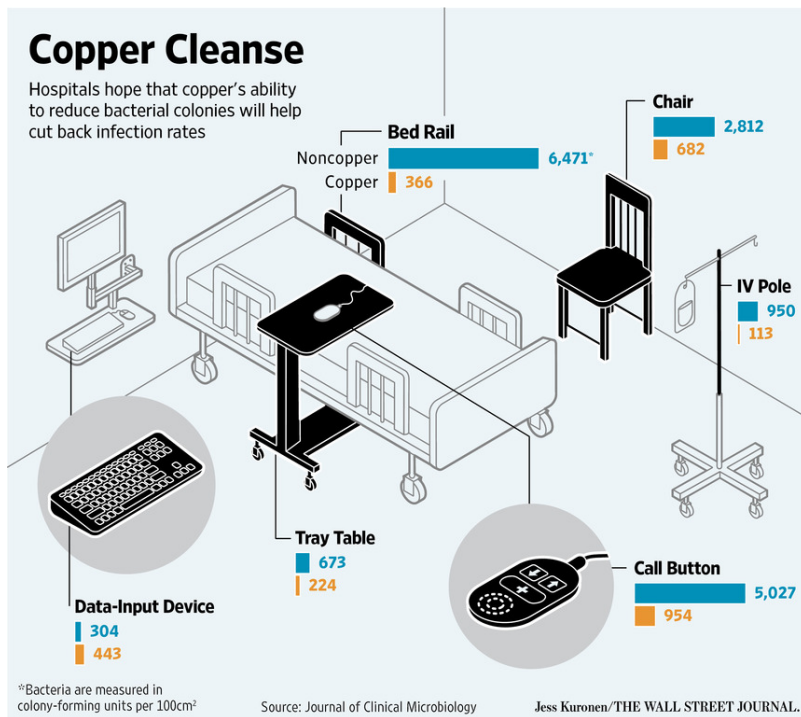
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Paging Doctor Copper: Metal Wins Fans in Health Care

Copper is used in everything from automobiles to air conditioners, but it has one property that makes it especially attractive for medical uses: It kills bacteria



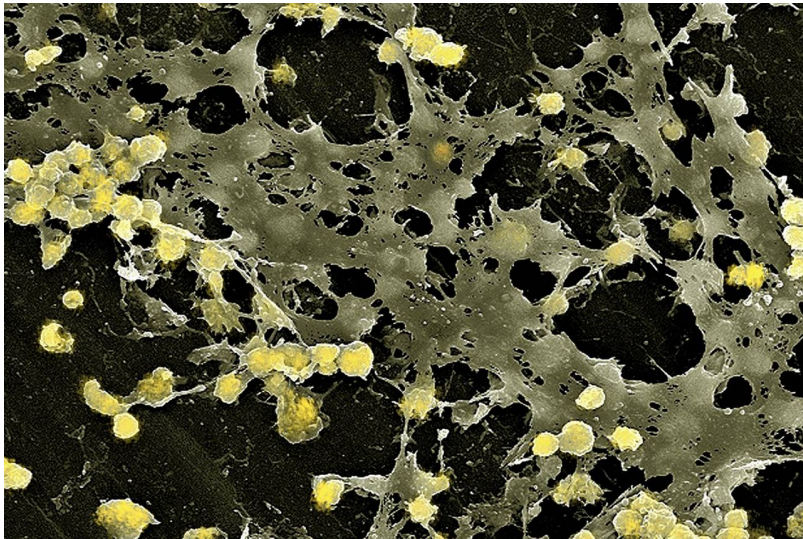
By **STEPHANIE YANG**

July 25, 2016 4:25 p.m. ET

A burgeoning opportunity for copper producers relies on a simple premise: that the base metal is good for your health.

Copper is used in everything from construction to electrical wiring, but it also has antimicrobial properties that kill 99.9% of bacteria on its surface within two hours, according to the Environmental Protection Agency. That makes it a potential weapon for combating the spread of infections in hospitals and public areas.

More than 150 health-care and other facilities have installed antimicrobial copper alloy surfaces manufactured in the U.S. since 2011, according to the Copper Development Association. Products range from copper carts and sinks to door knobs.



Staphylococcus aureus is one of many infection-causing bacteria that copper combats. PHOTO: UIG/GETTY IMAGES

Some in the industry are hoping that these products will provide a new avenue of growth as other major sources of demand have slowed, even though copper's health-care uses are relatively expensive and some health-care professionals question its ability to reduce infection.

Copper prices have fallen by more than half since they peaked above \$4.60 a pound in 2011, as growth in China, the world's largest consumer, has slowed. Prices have recovered 3% this year as concerns over China's economy have eased.

The drop in copper prices in recent years is one factor leading more health-care professionals to consider using the metal. High prices have been a deterrent; installing copper instead of plastic or stainless steel can increase costs as much as 50% according to the CDA.

The adoption of copper alloys in hospitals is unlikely to make much of a splash in the 20-million-ton copper market, since the installations use copper on a smaller scale than general industrial uses.

But antimicrobial copper is gradually making its way into a variety of applications

outside of health-care, too, such as public transportation, training facilities, private households and airports.



“Day cares, shopping malls, cruise ships should be made completely out of copper,” said Todd Linden, president of the Grinnell Regional Medical Center in Grinnell, Iowa, which has installed copper surfaces.

Copper kills bacteria by draining electrons, which provide energy, and by pumping copper ions into the cell. This destroys the cell membrane, DNA and proteins, causing the cell to die. On stainless steel, which is more commonly used in health-care applications, bacteria can survive for weeks.

The metal’s antimicrobial properties have been documented as far back as 2600 B.C., when it was used in sterilizing wounds and drinking water. But the market for copper use in health-care facilities got a big boost after 2008, when the EPA allowed manufacturers to market registered copper products with public-health claims.

Producers said the EPA approval could substantially increase the metal’s use in hospitals, especially as more-recent studies on copper’s efficacy have caught the attention of an increasing number of hospital executives.

“We’re getting a lot more inquiries than we ever have before, particularly in the health-care sector,” said Anthony Kulik, director of the proprietary CuVerro copper product at Olin Brass, a copper producer that is part of Global Brass and Copper Inc. While CuVerro still accounts for a small portion of business at Olin Brass, it is an “opportunity for growth for players in this specific industry,” Mr. Kulik said.

The Centers for Disease Control and Prevention said that in 2014, about one in 25 patients in U.S. hospitals had at least one health-care-associated infection, or HAI. A study led by Albert Marchetti of the Medical Education and Research Alliance estimates that HAIs result in an additional \$96 billion to \$147 billion in annual health-care costs in the U.S.

In a 2013 study by the Medical University of South Carolina, using copper on frequently touched surfaces was shown to reduce HAIs by 58%.

The growing adoption comes as the Affordable Care Act has put pressure on health-care institutions by penalizing hospitals that underperform on quality standards such as

infection rates.

Still, some health-care professionals aren't convinced of copper's ability to directly impact infections, and are waiting for more evidence before springing for new, more-expensive components. According to Louise Dembry, president of the Society for Healthcare Epidemiology of America, copper surfaces likely won't help where most bacteria is transferred, in skin-to-skin contact. She said it may even provide a false sense of security, leading to less cleaning and hand-washing.

"To sell this to an administrator, I'd have to have a lot of data to prove this will really make a difference," Dr. Dembry said.

Copper-industry executives also say rigorous regulatory standards have impeded growth. These include EPA requirements on new copper-based antimicrobial products like registration fees, education plans and prior testing.

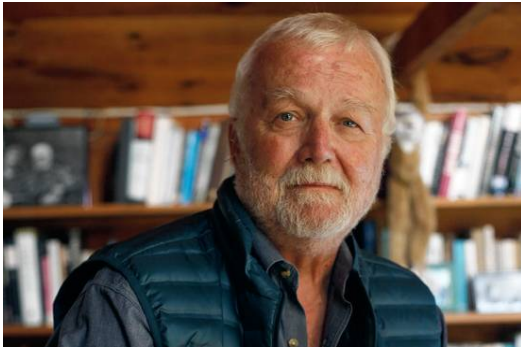
The EPA said the process has gotten faster and averages about five months once the application is submitted for a new product.

Issues like regulation, higher costs and established usage of plastic and steel surfaces in medical applications have caused consumption to fall short of initial projections. In 2010, Chile's state-owned copper company Corporación Nacional del Cobre de Chile, the world's largest copper producer, forecast that the health-care sector's copper consumption could generate up to 1 million tons of additional demand. Most recently, the total market potential in hospitals and long-term care is estimated at 424,000 tons, according to the CDA.

Copper still has its health-care proponents. Since receiving a grant to install copper surfaces in Pullman Regional Hospital in Pullman, Wash., Ed Harrich, director of surgical services there, said the addition of copper alloys has become a priority and is setting aside funds every year to purchase more.

The metal's antimicrobial properties are winning fans outside of health care, too. Sports teams such as hockey's Los Angeles Kings and St. Louis Blues use CuVerro in their training facilities, and the Hartsfield-Jackson Atlanta International Airport has installed copper water fountains. Antimicrobial copper handrails are in trains in Chile and buses in Poland. The company Cupron has developed odor-resistant socks and linens by using antimicrobial copper in fabric.

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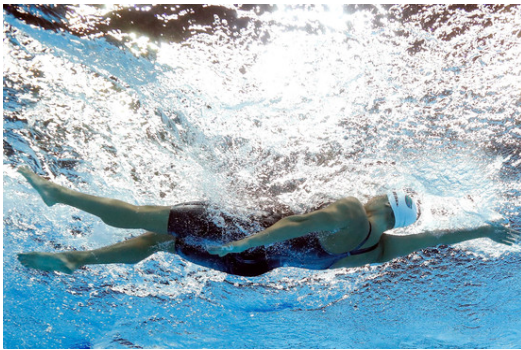
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