Antimicrobial Copper: new market opportunities

International Copper Association

Codelco

COPPER 50 YEARS 1959-2009
International Copper Association, Ltd.

CODELCO

Antimicrobial Copper Cu+

Problem: Hospital Acquired Infections

Hospital acquired infections (HAIs):

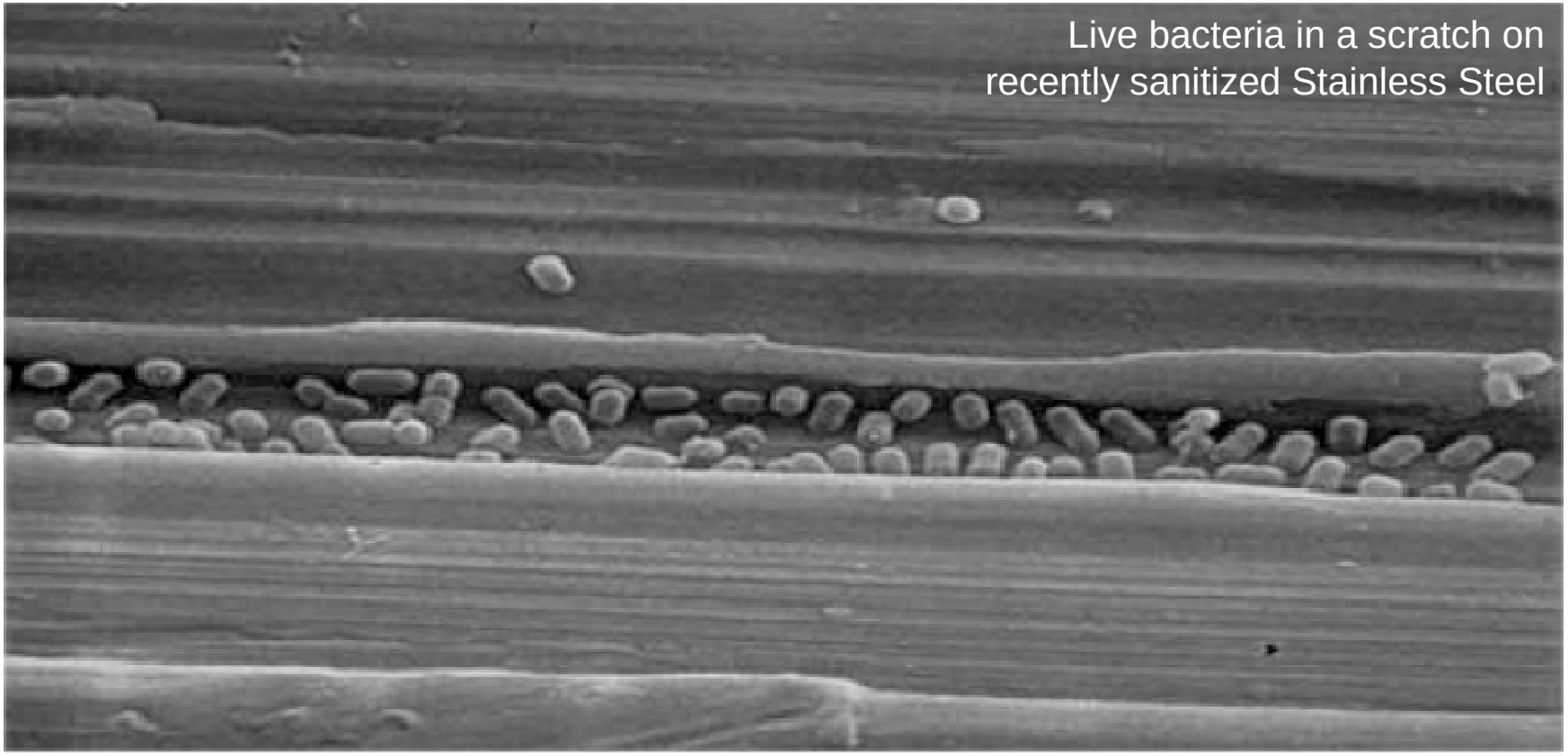
Worldwide

- 7,000,000 infections per year worldwide
- 100,000 deaths annually in the US costing USD 35-45 billion
- 50,000 deaths annually in Europe
- Healthcare Acquired Infections are the 4th leading cause of death

Chile

- In Chile, around 70.000 HAIs are reported annually and it is estimated that they produce 700.000 extra bed days with additional associated costs reaching USD 70.000.000.

Even though healthcare furnishings are designed to be easily cleaned - are they really clean?



Worldwide infection control practices focus on hand washing and desinfection: It hasn’t been enough

Primordial need:

New complementary methods for controlling HAIs

Three Good Laboratory Practice test protocols were co-developed with the EPA

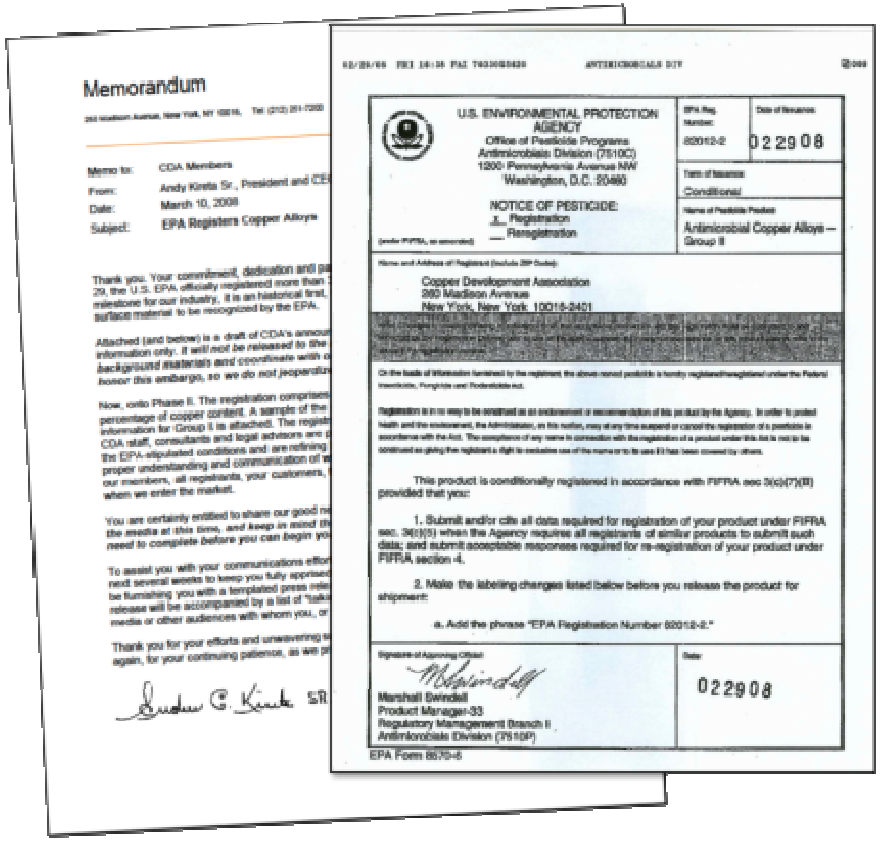
1) "Efficacy as a Sanitizer"
   (Kills organisms within 2 hours)
2) "Residual Self-Sanitizing Activity"
   (Standard wear/cleaning will not impede efficacy)
3) "Continuous Reduction of Bacterial Contaminants"
   (Kills organisms after repeated contaminations)

In total six bacteria were tested:

- *Staphylococcus aureus*
- *Enterobacter aerogenes*
- *Escherichia coli O157:H7*
- *Pseudomonas aeruginosa*
- *Methicillin-Resistant Staphylococcus aureus (MRSA)*
- *Vancomycin-Resistant Enterococcus faecalis (VRE)*

EPA Registers Copper and Copper Alloys antimicrobial property

- In February 2008, the U.S. Environmental Protection Agency approved the registration of antimicrobial copper alloys, with “public health” claims.
- Copper is the first and only solid surface material to be recognized by the EPA as being antimicrobial and can legally make “public health” claims.
- The EPA registration is based on independent laboratory testing using EPA-prescribed protocols that show the metals’ ability to kill specific disease-causing bacteria including Methicillin-resistant Staphylococcus aureus (MRSA), one of the most virulent strains of antibiotic-resistant bacteria and a common cause of hospital- and community-acquired infections.
- The registration states that, “When cleaned regularly, Antimicrobial Copper Alloys surfaces kill greater than 99.9% of (specific) bacteria within two hours, and continue to kill more than 99% of (these) bacteria even after repeated contamination.” Copper alloy surfaces are a supplement to standard infection control and hygienic practices. .


Memorandum

Memo to: CDA Members
From: Andy Kireta Sr., President and CE
Date: March 10, 2008
Subject: EPA Registers Copper Alloys

Thank you. Your commitment, dedication and pa
29, the U.S. EPA officially registered more than
milestone for our industry. It is an historical first,
surface material to be recognized by the EPA.

Attached (and below) is a draft of CDA's announ
information only. It will not be released to the
background materials and coordinate with o
honor this embargo, so we do not jeopardize

Now, onto Phase II. The registration comprises
percentage of copper content. A sample of the
information for Group II is attached. The regist
CDA staff, consultants and legal advisors are p
the EPA-stipulated conditions and are refining
proper understanding and communication of w
our members, all registrants, your customers,
whom we enter the market.

You are certainly entitled to share our good n
the results at this time, and keeps in mind th
need to complete before you can begin yo

To assist you with your communications effor
next several weeks to keep you fully apprised
be furnishing you with a templated press relea
release will be accompanied by a list of "talki
media or other audiences with whom you, or

Thank you for your efforts and unwavering s
again, for your continuing patience, as we p

Sincerely,

Andrew G. Kireta Sr.

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Pesticide Programs
Antimicrobials Division (7510C)
1200 Pennsylvania Avenue NW
Washington, D.C. 20460

EPA Reg. Number: 82012-2
Date of Issuance: 022908

NOTICE OF PESTICIDE:
X Registration
— Reregistration

Term of Issuance: Conditional

Name of Pesticide Product: Antimicrobial Copper Alloys — Group II

Name and Address of Registrant (Include ZIP Code):
Copper Development Association
260 Madison Avenue
New York, New York 10016-2401

On the basis of information furnished by the registrant, the above-named pesticide is hereby registered/reregistered under the Federal Insecticide, Fungicide and Rodenticide Act.

Registration is not to be construed as an endorsement or recommendation of this product by the Agency. In order to protect health and the environment, the Administrator, on his motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under this Act is not to be construed as giving the registrant a right to exclusive use of the name or to bar EI has been covered by others.

This product is conditionally registered in accordance with FIFRA sec 3(c)(7)(B) provided that you:

1. Submit and/or cite all data required for registration of your product under FIFRA sec. 3(c)(5) when the Agency requires all registrants of similar products to submit such data; and submit acceptable responses required for re-registration of your product under FIFRA section 4.

2. Make the labeling changes listed below before you release the product for shipment:

a. Add the phrase "EPA Registration Number 82012-2."

Signature of Approving Official: Marshall Swindell
Product Manager-33
Regulatory Management Branch II
Antimicrobials Division (7510P)

Date: 022908

EPA Form 8570-6

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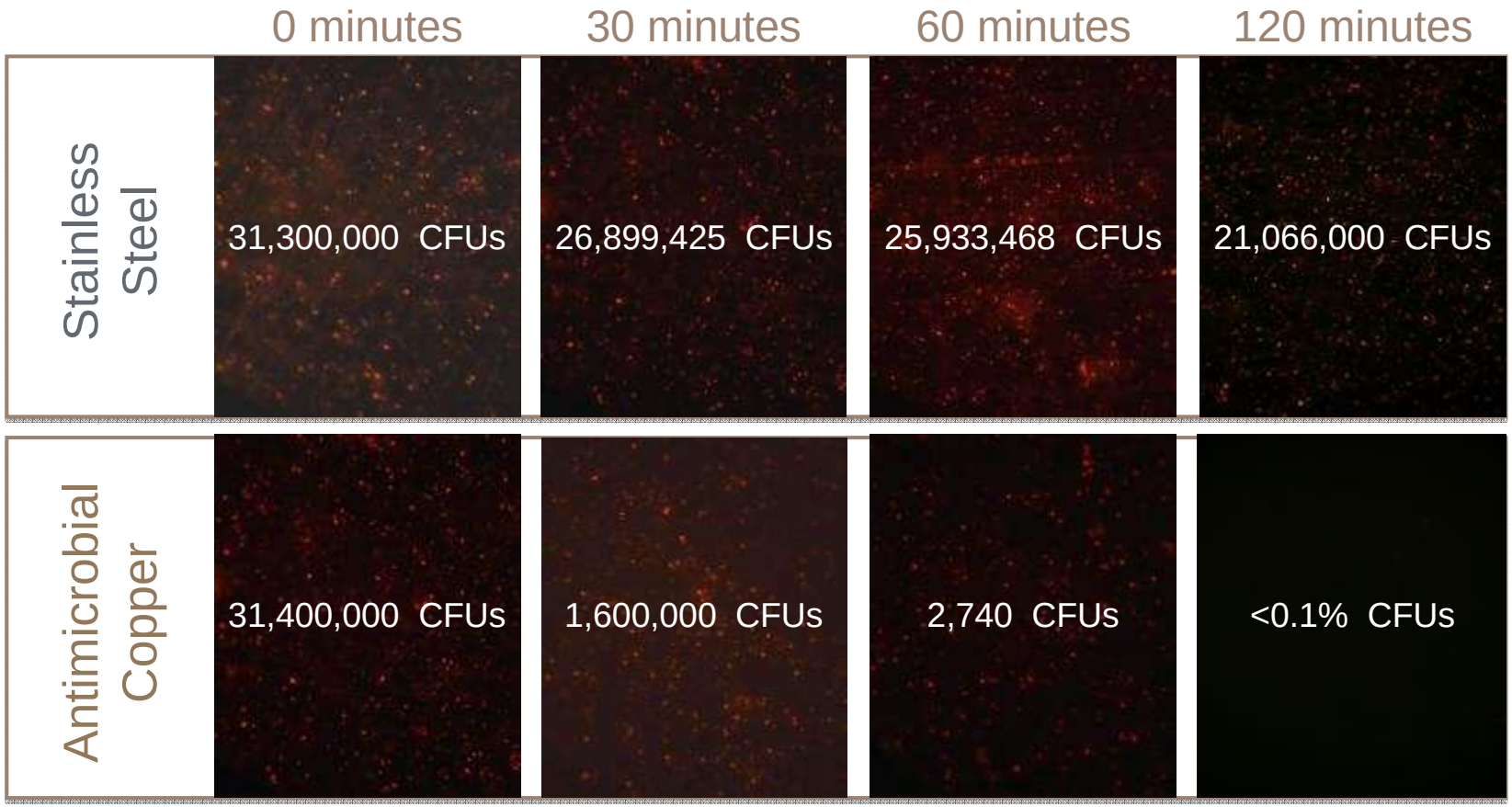
E. Coli O157:H7 on Stainless Steel and Antimicrobial Copper



Epifluorescence Images after Staining with Viability Fluorophore CTC

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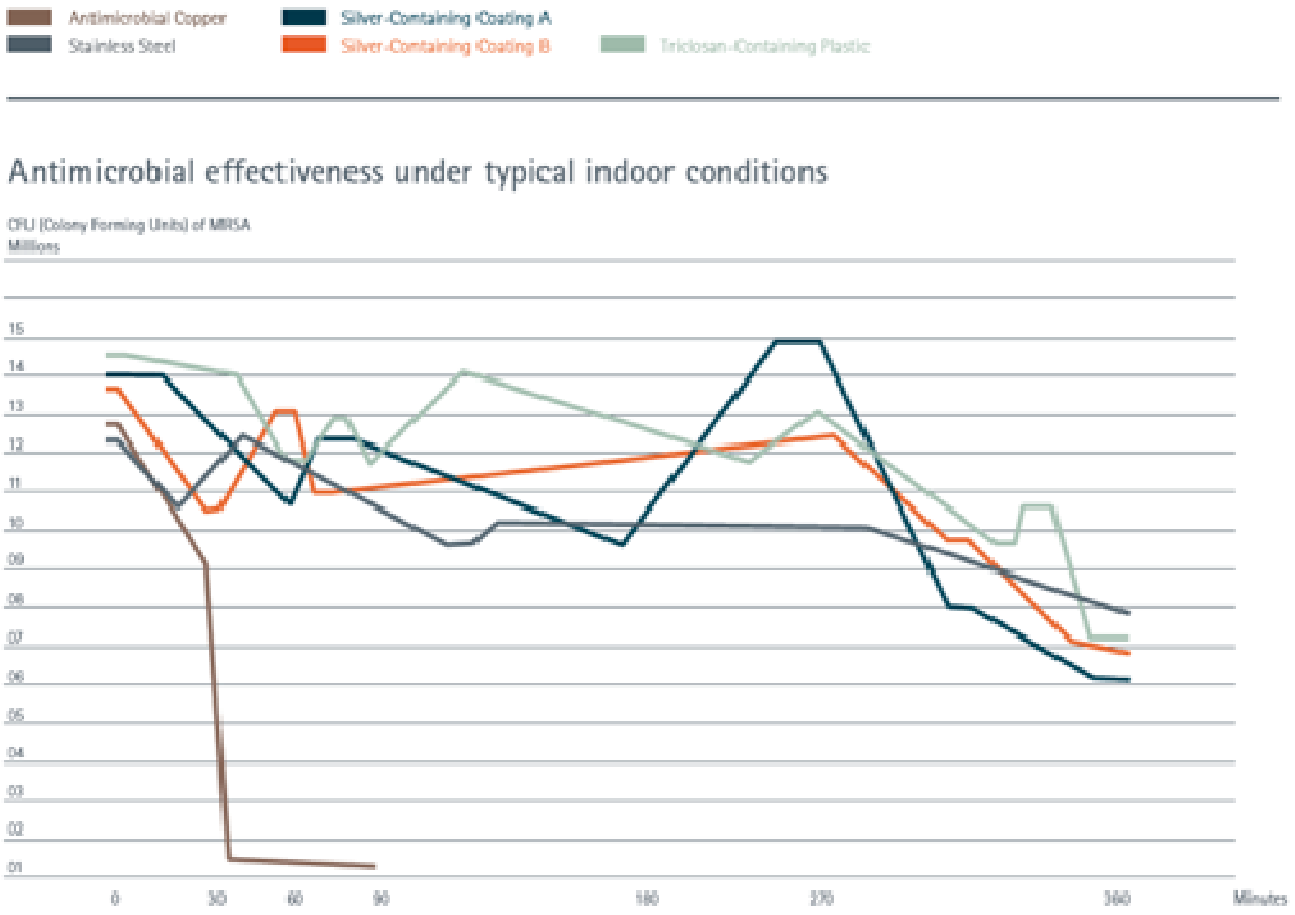
No other material comes close to Antimicrobial Copper



Antimicrobial Copper is the most effective* touch surface material, killing greater than 99.9% of bacteria* within 2 hours of exposure.

No other material, such as silver-containing coatings or stainless steel, comes close.

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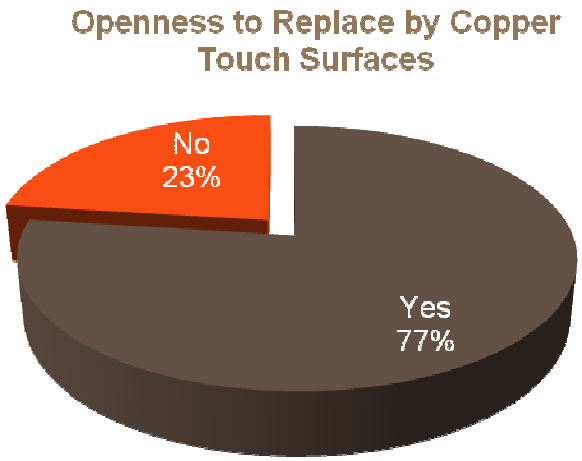
Market Potential: market research

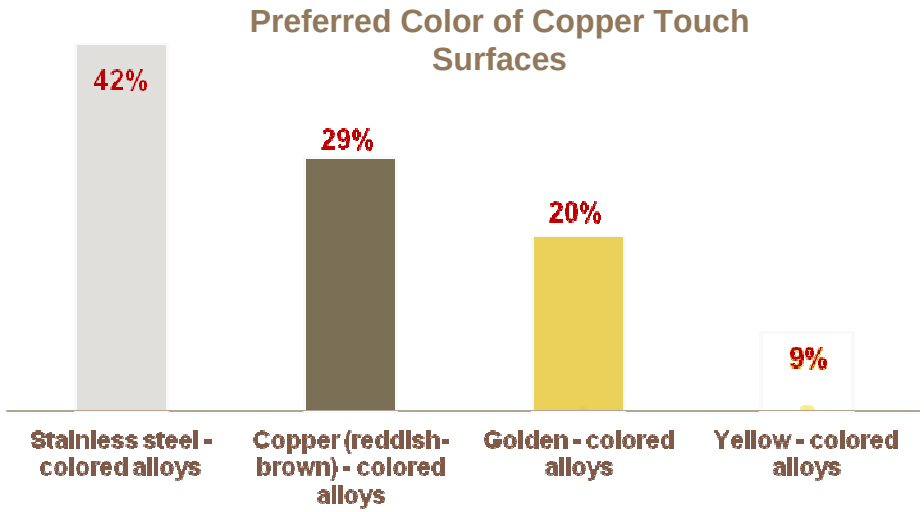
The estimated cost savings that could be achieved in the developed regions of the world ranges from USD 10 –14 billion accounting for an overall savings of 12 – 17 percent (2/2)

Annual Cost Savings that can be achieved using Copper Touch Surfaces	Low Estimate	High Estimate
Total Cost Savings	~ USD 9.7 Billion	~ USD 13.9 Billion
Approximate annual Costs associated in combating HAI's in the developed regions of the world	USD 80.000.000.000	
Potential Percentage of Cost Savings by using Copper Touch Surfaces in the developed regions of the world	12%	17%

- The estimated potential increase in the demand of copper due to its antimicrobial properties is expected to be in the range of 550,000 – 1,000,000 tones, considering one-time replacement of the top 10 product in the geographies covered in the study.

Over 70 percent of the respondents in all geographies analyzed were open to the idea of implementing copper touch surfaces in hospital environment





Chilean experience:

Hospital trial at “Hospital del Cobre Dr. Salvador Allende Gossens”

Project with financial support of Innova Chile Corfo (governmental agency), UNTEC, ICA and Codelco: “*Desarrollo de Plataforma de Conocimiento y Capacidades Locales para la Creación de Nuevos Productos que utilicen la Propiedad Antimicrobiana del Cobre (08CM01-19)*”.

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Copperized objects

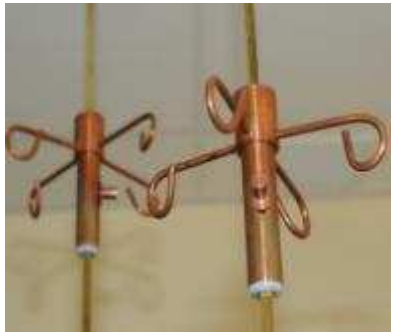
Copperized Objects

CHAIR ARMS

BED RAILS

BED LEVER

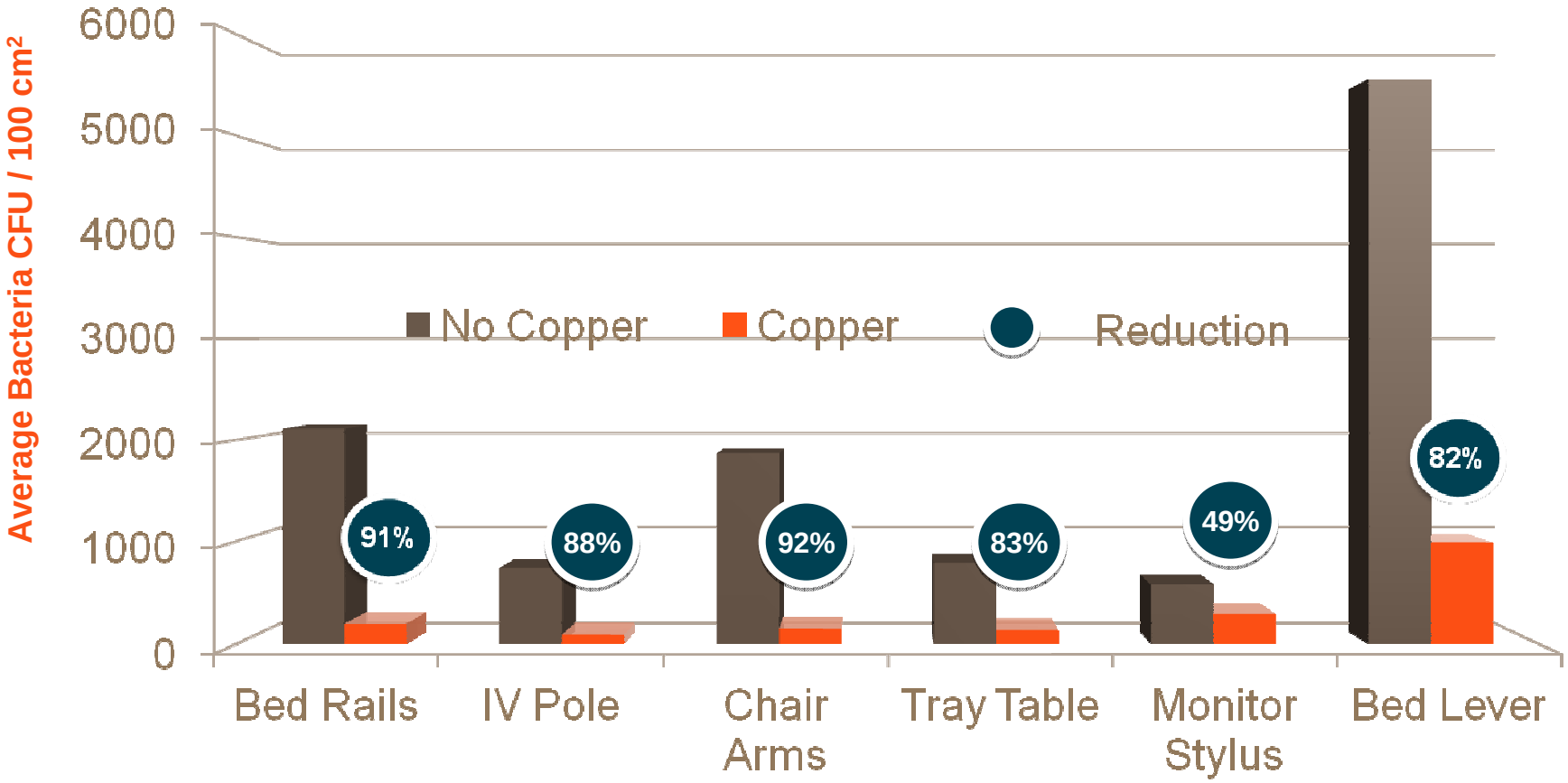
TRAY TABLE



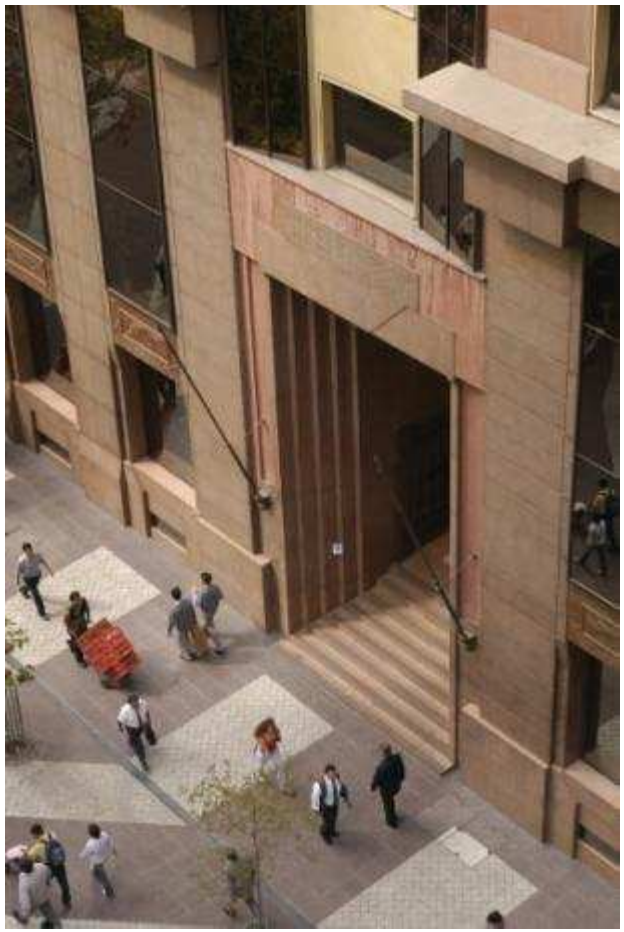
IV POLE

STYLUS PEN

Clinical Trials Results: Calama, Chile
~90% reduction on copper surfaces



Headquarter of Codelco, first building in Chile protected by Antimicrobial Copper Cu+



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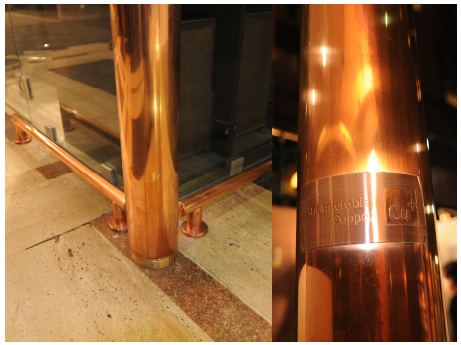
Headquarter of Codelco, first building in Chile protected by Antimicrobial Copper Cu+

Antimicrobial Copper Cu+ Touch Surfaces in Headquarter of Codelco

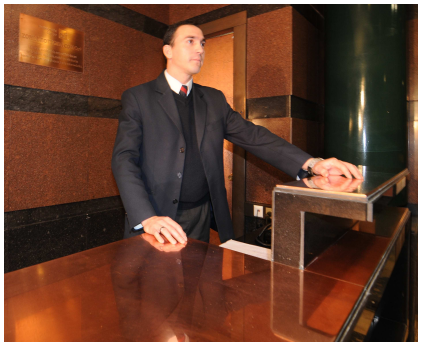
DOOR KNOBS

MAIN ENTRANCE HANDLES

INSIDE GLASS DOOR HANDLES



POLE



RECEPTION DESKS

INSIDE LIFT HANDRAILS

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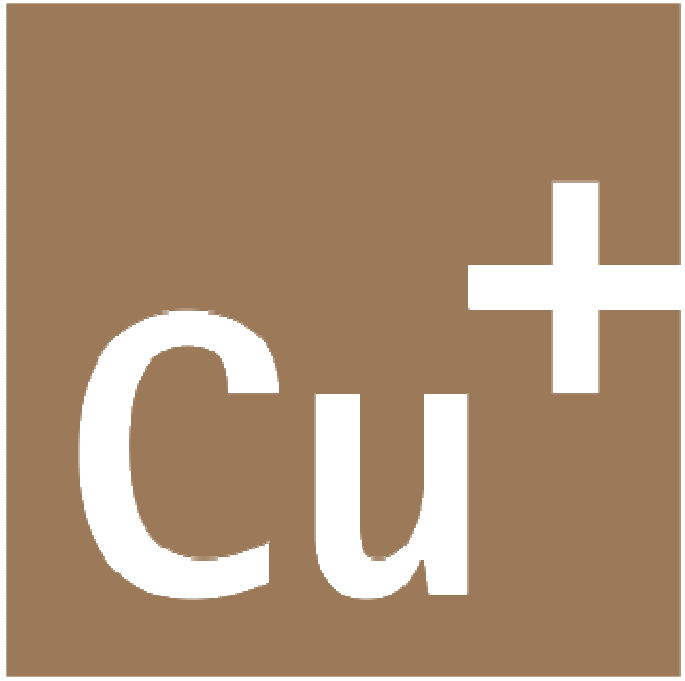
New market opportunities


The mark of the most
effective* antimicrobial
touch surfaces

Wherever you find this mark, you can trust Antimicrobial Copper is continuously killing bacteria* that cause infections



The Antimicrobial Copper mark is used by leading product manufacturers and copper fabricators to indicate that their products are made from Antimicrobial Copper, the world's most effective* antimicrobial touch surface material.

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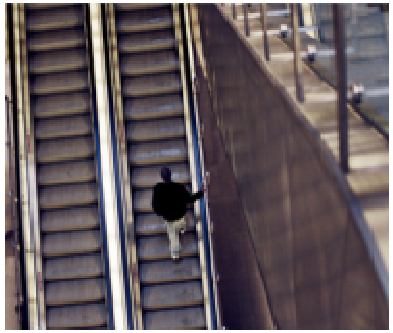
Opportunities exist beyond healthcare

Touch Surface Applications

MEDICAL &
HEALTHCARE

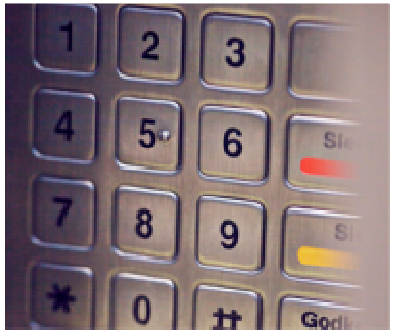


PUBLIC
BUILDINGS

PUBLIC
TRANSPORT

ELECTRONICS

SCHOOLS



FOOD &
HOSPITALITY

SPORTS
FACILITIES

FAUCETS

Thank you

Thank you

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