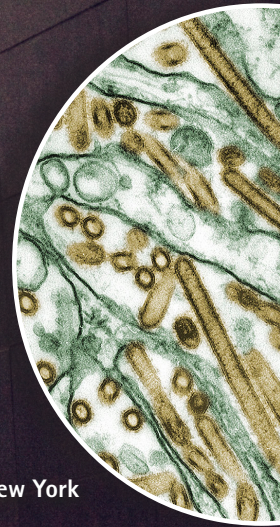


# Antimicrobial Copper and... Influenza A Virus



Name of Study: Inactivation of Influenza A Virus on Copper versus Stainless Steel Surfaces

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A study at the University of Southampton in the U.K. demonstrated that Influenza A was rapidly inactivated on copper alloy surfaces as a result of antimicrobial properties in the metal.

## Key findings:

- On stainless steel, 50% or one million virus particles remained viable after six hours of contact; and 500,000 of the virus particles were still capable of causing cell infection after 24 hours.
- On copper, the number of infectious virus particles was reduced by 75% to 500,000 after only one hour of contact, which is the equivalent of 24 hours on stainless steel. After six hours on copper, the number of infectious virus particles dropped to 500, a 99.99% reduction.
- The results suggest that materials which possess innate antiviral properties could act to prevent subsequent contamination.

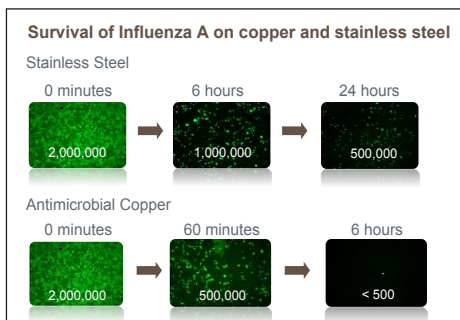
## Influenza A Facts:

### What is it?

- Influenza A, also known as the flu or seasonal flu, is a contagious respiratory illness caused by a viral pathogen.

### How is it contracted?

- Information from the Centers for Disease Control and Prevention (CDC) suggests that influenza is transmitted from person-to-person contact or from touching contaminated surfaces.
- Previous studies have shown that once surfaces are contaminated, fingers can transfer virus particles to up to 7 other clean surfaces.



Epifluorescent images showing concentration of infected cells on copper and stainless steel after several exposure times. Green areas indicate active infections. Within six hours, 99.99% of viral particles were inactivated on copper, while 25% survived on stainless steel even after 24 hours.

- Influenza A virus is easily transferred from hands to surfaces and vice versa.
- Symptoms may include fever, cough, sore throat, runny or stuffy nose, muscle or body aches, headaches, fatigue and diarrhea (more common in children than adults).

## Where is it prevalent?

- Influenza A can survive on a range of environmental surfaces, including stainless steel; thus good hand washing procedures are important to combat transmission.
- According to the World Health Organization (WHO), there are approximately 3 to 5 million cases of the flu and 250,000 to 500,000 deaths each year.

## Copper Facts:

This study was performed because copper alloys have previously been shown to be effective antimicrobial surfaces against a range of bacteria, fungi, and viruses. A U.S. based clinical trial revealed that the use of copper surfaces in hospital rooms can reduce the number of healthcare-acquired infections (HAIs) by 58 percent. Six highly touched objects – bed rails, over-bed tables,

chair arms, call button, computer accessories and IV poles – found in ICU rooms at three U.S. hospitals were retrofitted with copper touch surfaces for the clinical trial.

## Brief synopsis of methodology

Two-million Influenza A virus particles were measured and placed on copper and stainless steel coupons. The coupons were kept at room temperature and recovered after one-, six-, and 24-hour exposure times. Virus particles recovered from the coupons were counted under a microscope with the help of a fluorescent dye that illuminates viral particles that are still infectious.



To download the full study, visit <http://goo.gl/Ing8dF>.

This is part of an ongoing series designed to educate the public about individual studies conducted with copper and explain its ability to inactivate, and in some instances kill, bacteria, viruses and diseases. To learn more about copper, visit [www.antimicrobialcopper.com](http://www.antimicrobialcopper.com) or [www.copper.org](http://www.copper.org).

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