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## **COPPER COULD HELP PREVENT THE SPREAD OF FLU INFECTIONS**

Copper could help prevent the spread of flu infections. Recent research at the University of Southampton shows that the Influenza A virus is virtually eradicated within six hours on copper surfaces. Influenza A viruses cause seasonal infections, resulting in around 12,000 deaths a year in the UK<sup>1</sup>. The Influenza A family of viruses includes the problematic Avian flu strain.

Professor Bill Keevil and Dr Jonathan Noyce, microbiology researchers at the University, detail the findings in a study being prepared for submission for peer-reviewed publication later this year. Professor Keevil explained: "The findings are so pertinent to the current concerns about containing a potential outbreak of the avian flu strain, that we felt it important to provide some of the preliminary results at this time."

The Southampton researchers placed 2 million plaque-forming units of Influenza A (H1N1) on coupons of C11000 copper (high purity copper) and on S30400 (common stainless steel) at room temperature and then monitored them periodically to determine the survival rates of the samples. On the stainless steel surface, the pathogen declined to 1 million after six hours and to 500,000 after 24 hours. Meanwhile, the copper surface achieved a reduction to 500,000 after only one hour and inactivated all but 500 — a 99.99% reduction — after just six hours.

In the research Professor Keevil notes that the H1N1 strain tested is nearly identical to the H5N1 (avian) strain and that the effectiveness of copper's antimicrobial properties should be nearly identical as well. He explains that, while vaccines stimulate host antibodies to target specific exposed cell surface structures (epitopes), copper's antimicrobial action probably attacks the overall structure of the virus and therefore has a broad-spectrum effect.

"These results are consistent with the demonstrated antimicrobial effects of copper cited in published studies on *E. coli* O157:H7, Methicillin-resistant *Staphylococcus aureus* (the

superbug, MRSA) and *Listeria*," said Professor Keevil, adding that similar antimicrobial efficacy may be achieved by the infusion of copper ions into fabrics, filters or other materials. However, such applications may have diminished effectiveness over time, because the amount of copper in such materials is much less than in solid copper alloys.

Suggesting it would be worthwhile to consider using uncoated copper or high-copper alloys, such as many brasses and bronzes, for common-touch surfaces to help minimise cross-contamination, Professor Keevil said: "Door knobs and handles, push plates, countertops, sinks and other frequently-touched hardware in healthcare and other public facilities are prime candidates for the use of copper alloys to help control the spread of infection."

The Southampton research was sponsored by Copper Development Association Inc in the USA and the International Copper Association.

The UK Copper Development Association is running a programme to develop applications exploiting copper's antimicrobial properties and to communicate news and developments to architects, designers, product manufacturers, material suppliers, healthcare professionals and facilities managers. For further information, or to join the Antimicrobial Copper Interest Group, please contact [gareth.price@copperdev.co.uk](mailto:gareth.price@copperdev.co.uk) or visit [ww.cda.org.uk/antimicrobial](http://ww.cda.org.uk/antimicrobial).

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**Note to editors:**

JPEGs @ 300dpi available by email from [gareth.price@copperdev.co.uk](mailto:gareth.price@copperdev.co.uk)

1. Improving preparedness for possible flu pandemic, Department of Health press release 0083, 2005.

2. The University of Southampton is one of the UK's top 10 research universities, with a global reputation for excellence in both teaching and research. With first-rate opportunities and facilities across a wide range of subjects in science and engineering, health, arts and humanities, the University has around 20,000 students and 5,000 staff at its campuses in Southampton and Winchester. Its annual turnover is in the region of £274 million.

Southampton is recognised internationally for its leading-edge research in engineering, science, computer science and medicine, and for its strong enterprise agenda. It is home to world-leading research centres, including the National Oceanography Centre, Southampton; the Institute of Sound and Vibration Research; the Optoelectronics Research Centre; the Textile Conservation Centre; the Centre for the Developmental Origins of Health and Disease; the Mountbatten Centre for International Studies.