

Perfect storm for silver brewing as antibiotics substitute--Silver Institute

Silver may soon replace antibiotics as an alternative for healing, and is increasingly gaining ground in the burgeoning field of nanotechnology.

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SPOKANE, WASHINGTON -

The over-prescription of antibiotics and the rapid spread of bacteria globally are creating "a perfect storm for silver," which will encourage even more medical use of the precious metal, Silver Institute Executive Director Mike DiRienzo said Thursday.

In a presentation to the Silver Summit in Spokane, DiRienzo detailed new and emerging uses for silver, lead by the metal's growing significance in hospitals and the practice of medicine.

"Currently we're seeing a surge of applications for silver-based biocides in all areas: industrial, commercial and consumer. New products are being introduced almost daily," he said.

Silver may soon replace antibiotics as an alternative to healing, he explained. The use of silver in medical implants is in the testing phase, such as the use of silver in medical implants to reduce the threat of spinal infections.

DiRienzo explained, "Engineers at the University of California, Davis have developed a 'smart' contact lens designed to measure pressure within the eye. High eye pressure can be a sign of glaucoma, the world's second leading cause of blindness."

"At the heart of the new lens are sensors that measure stress on the cornea and the fluid pressure within the eye. The lens is composed of a type of silicone used in commercial contact lenses and silver particles placed on the lens that act as conductive wires and double as antimicrobial agents," he added.

The new lens could be used by hospitals and doctors to check for glaucoma but also by patients in their homes through a personal computer hooked into a wireless network.

Meanwhile, hospitals are increasingly utilizing silver in equipment surfaces, coatings, and other uses aimed at reducing bacteria growth. Silver is even being used in the paper used in hospital notes.

The Federal Drug Administration is permitting silver to be used in bottled water, DiRienzo noted. It is already being utilized in coatings for equipment used in the processing for milk.

Silver can also be found in germ-killing lockers now being used by the military, he said.

The precious metal is also being increasingly used in textiles, such as in polyester fiber coatings. DiRienzo said India just began using silver to preserve silk fabrics. Scientists at the Indian Institute of Technology in New Delhi have developed a method to create anti-microbial silk by infusing the delicate material with silver ions.

"This marks the first time that silver ions have been embedded into woven silk although it has been successfully applied to cotton and synthetic textiles," DiRienzo noted.

Among other consumer applications of silver are consumer electronics with millions expected to be invested in silver conductive inks by 2015, DiRienzo explained.

Silver has been used in surface mounting, which allows components to be fastened both mechanically and electronically to printed circuit boards. Components are placed in indentations on circuit boards and molten silver alloy solder flows across its surface to create an instantaneous permanent bond between the two.

Silver is used to concentrate solar-energy for power generation, and in humidifiers to slow the growth of bacteria. It also used in rechargeable solar batteries.

Silver is also reducing bacteria in refrigerators and in washing machines, he added.

DiRienzo noted that "the newest trend is the use of nano-silver particles to deliver silver ions as the nano-technology industry grows and we become more knowledgeable about how nano-particles behave."

He called silver nanotechnology "a huge market," which is being somewhat stymied by a two-year battle with EPA over the designation of the technology as a potentially toxic metal.

The U.S. has the heaviest nanotechnology investment, DiRienzo noted, with Japan is second place.