



ECONOMIC IMPORTANCE AND PUBLIC HEALTH BENEFITS OF SILVER

Policies are Needed to Enable Production of More Domestic Silver, Reduce Silver Imports, and Promote Research on Expanded Silver Uses in Medicine

Silver is a versatile metal with a wide range of uses in electronics and industrial applications. Silver is also growing in importance in energy and medical applications. Research over the last decade has refined and improved our understanding of the constraints on safe use and the possibilities of future new and expanded applications of silver in medicine.¹

U.S. Silver Production

Current domestic silver production does not meet the country's demand for this important metal. The USGS Mineral Commodities Chart of Net Import Reliance for 2019 shows that the U.S. is 68% dependent on imports for silver.

Although the U.S. has several mines where silver is the main metal produced, most silver is produced as a byproduct of mining other metals, especially lead, zinc, copper and gold. The U.S. Geological Survey (USGS) 2020 Mineral Commodity Summary for silver notes that primary silver is produced from four domestic silver mines and byproduct silver comes from 33 mines that produce other metals. Primary silver production in the U.S. is from silver mines in Alaska and Nevada. By-product silver production comes from mines in Arizona, California, Colorado, Idaho, Missouri, Montana, New Mexico, South Dakota, and Utah. Mines that produce silver as a byproduct account for more than two-thirds of U.S. and world resources of silver.²

Silver is Important to the Economy and Everyday Life

More than 50% of current global demand for silver is for industrial fabrication. Silver's unique properties of strength, malleability and ductility, electrical and thermal conductivity, high light reflectance, and ability to endure extreme temperature ranges make it ideal for a variety of applications. These uses include brazing alloys, photography, electrical, and photovoltaics. Silver can be found in computers, home appliances, and mobile phones. It is also essential to both hybrid and fully electric vehicles and solar-energy infrastructure.

In 2019, the estimated domestic uses for silver were electrical and electronics, 30%; jewelry and silverware, 26%; coins and medals, 12%; photography, 3%; and other, 29%. Many of these industrial uses form an integral part of the country's ability to transition to a greener economy.

¹<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6316173/>and<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6315945/>

² <https://pubs.usgs.gov/periodicals/mcs2020/mcs2020-silver.pdf>

Demand for silver is anticipated to increase markedly as solar photovoltaic cells contribute a larger percentage to low-carbon power generation.³

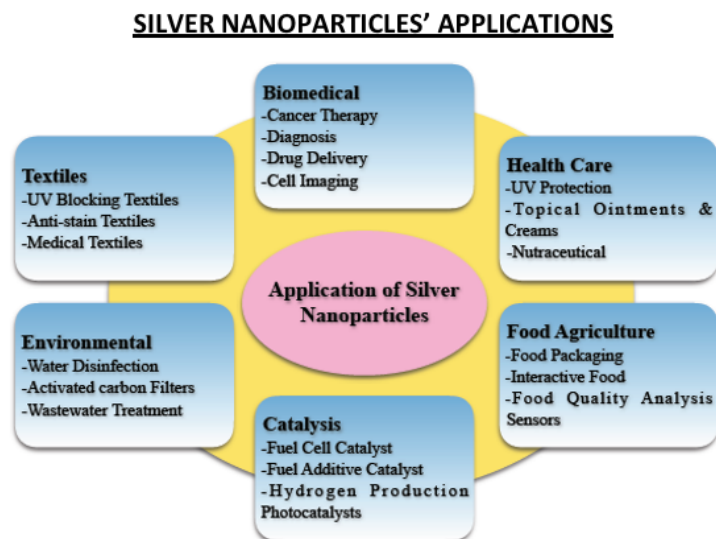
Advances in Medical Applications of Silver

Silver has long been used in medicine because it has proven antimicrobial properties that play an important role in fighting infection and in minimizing the spread of bacteria globally. While medical applications are a small percentage of silver's usage, recent research has focused on silver's ability to penetrate the cell walls of bacteria and destroy its ability to reproduce.

Silver is used in water purification systems in hospitals, community water systems and other public spaces.⁴ Silver nanofiltration has broad applications globally and innovation in this field is ongoing.

Recent Advances in Medical Research on Silver

Research has moved forward into the commercial applications for the emerging field of silver nanoparticles (AgNP) in antibacterial applications. A "Superbug" bacteria resistant to commonly prescribed antibiotics has become a global threat to public health in recent years. Metals that resist chemical interactions have been attracting broad attention due to their antimicrobial activities. An example of this new research is a University of Arkansas study, published by the American Society for Microbiology in January 2020, which reports the antimicrobial effect of silver ions at the nanoscale.⁵ AgNPs are also used in packaging to prevent damage to food products by pathogens. This graphic from a study completed in 2018 illustrates the broad applicability for AgNP in the marketplace.



Graphic: Silver Nanoparticles and their Antimicrobial Applications, Md Abul Barkat, et al, Current Nanomedicine, 2018, 8, 1-10
https://www.researchgate.net/publication/329864767_Silver_nanoparticles_and_their_antimicrobial_applications

³WorldBankGroup,2020,
<http://pubdocs.worldbank.org/en/961711588875536384/Minerals-for-Climate-Action-The-Mineral-Intensity-of-the-Clean-Energy-Transition.pdf>

⁴ <https://www.silverinstitute.org/silver-for-a-sustainable-future/>

⁵ <https://aem.asm.org/content/86/6/e02479-19>

Congress Must Keep Lands Available for Mining and Enact Policies to Encourage Domestic Mining

The future demand for silver will increase in a low-carbon, green-energy economy; in order to capitalize upon and expand the public health benefits of silver, Congress should enact policies that:

- Support and provide appropriate funding to further the research and development of new technologies and increase the use of silver in medical, industrial, and energy applications;
- Promote responsible development of U.S. silver resources;
- Ensure public lands with known silver deposits remain available for mineral exploration and development; and
- Reduce our reliance on silver from non-allied foreign countries.

Bills proposed in the 116th Congress including H.R. 2579 (Grijalva), S. 1386 (Udall/Heinrich), and H.R. 5598 (McCollum) are being considered for re-introduction in Congress during the current session. If enacted, these measures would put important copper resources and other minerals off-limits to development. These ill-considered policies would increase the country's reliance on China and other non-allied countries for the copper and other minerals that are essential to America's economy, technology, infrastructure, and defense.

About WMC

WMC is a grassroots organization with over 200 members nationwide. Our members work in all sectors of the mining industry including hardrock and industrial minerals, coal, energy generation, manufacturing, transportation, and service industries. We hold annual Washington, D.C. Fly-Ins to meet with members of Congress and their staff, and federal land management and regulatory agencies to discuss issues of importance to both the hardrock and coal mining sectors. For more information about WMC, please contact Emily Arthun at emily.arthun@wmc-usa.org or visit our website at: www.wmc-usa.org.

