

# Our Medical Supply Chain Needs a Strong Domestic Mining Industry

## THE MEDICAL AND HEALTHCARE APPLICATIONS OF MINERALS

Minerals and metals are essential to our modern medical world and are key to many of the medicinal innovations we see today, serving as the buildingblocks of the life-saving medical devices and medications that doctors and patients rely on every day. The antimicrobial and antiviral properties of minerals have never been more relevant or needed.

### COPPER

Not only can it be found in MRI scanners, copper is also critical to inhibiting the spread of viruses and is therefore used across a variety of medical equipment and applications. When influenzas, bacteria like E. coli, superbugs like MRSA, or even coronaviruses land on copper, they begin to die within minutes and are undetectable within hours.



Copper is resistant to corrosion, ductile, malleable and the only solid metal to be registered by the EPA as an antimicrobial touch surface.

### GOLD

Gold is essential to sophisticated medical equipment, including life-supporting devices, pacemakers, heart stents, CAT Scan devices, and it is used in the treatment of heart disease.



#### DO YOU HAVE A HEART OF GOLD?

##### DID YOU KNOW

Gold is used to make the medical technologies that keep our hearts healthy—like pacemakers and heart stents—and gold can even be used to treat heart disease.

MINERALS  
MAKE  
LIFE

### LITHIUM

Lithium is widely utilized in pacemakers, defibrillator machines and other types of portable electronic equipment.

### TITANIUM

Titanium, which is resistant to bacteria, is a critical component in surgical equipment.

### SILVER

Silver is an active ingredient in medical products as it prevents bacterial growth and accelerates the healing process. Because of this, silver is a present ingredient in a number of antibiotics. In fact, a small amount of silver makes E. coli bacteria significantly more sensitive to commonly prescribed antibiotics like penicillin.

#### MEDICAL TECHNOLOGY

##### X-RAYS

Silver X-rays are integral to healthcare in developing countries where resources are scarce because they are:

- Extremely accurate
- Cost effective

##### ANTIBIOTICS

- Prevents bacterial growth
- Accelerates the healing process

Silver prevents bacterial growth, accelerates the healing process, and can heighten the effectiveness of certain drugs. For instance, a small amount of silver makes bacteria like E. coli significantly more sensitive to antibiotics like penicillin.

Silver interrupts bacteria's ability to form the chemical bonds essential to its physical structure and survival, and causes the bacteria to literally fall apart



Silver nanoparticles sterilize up to **650** TYPES OF BACTERIA

### PLATINUM

Platinum group metals help fight cancer as active ingredients in chemotherapy drugs and in implants for radiation therapy. And because of their resistance to corrosion, they are also often found in medical devices such as pacemakers, implantable defibrillators, catheters and stints.

### ZINC

With their resistance to radiation, durability in harsh environments and malleable properties, zinc alloys are ideal for medical manufacturing applications. The metal's practical usage in medical technology includes defibrillators, portable oxygen supplies and patient monitoring devices. Studies have shown that zinc supplements may also help reduce the duration of symptoms from the common cold.