

STEM *Sims*™

Bacteria Miner



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**Do you need an idea for a scientific study?
Try out one of our ideas or make one of your own.**

Start learning right now about how copper can be extracted from ore using common bacteria. Take the following brief quiz to see how much you already know about the element called copper. See the bottom of page 4 to check your answers.

1. Which country currently produces the most copper?
 - a. Peru
 - b. Chile
 - c. United States
 - d. China
2. Which country has the largest amounts of in-ground copper reserves?
 - a. United States
 - b. China
 - c. Argentina
 - d. Chile
3. What percentage of the total world copper reserves does the country from the previous question have?
 - a. 12%
 - b. 24%
 - c. 38%
 - d. 56%
4. In the United States, each year more copper is placed into service through recycling than by newly-mined ore.
 - a. true
 - b. false
5. Which country currently has the greatest demand for copper?
 - a. China
 - b. Germany
 - c. United States
 - d. Mexico



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Got copper?

Copper is an important element in human health, work, and lifestyles. Copper is a trace element necessary to maintain good health in plants and in animals. In humans, copper is stored mainly in the liver, muscles, and bones. A number of foods are high in copper, including shellfish, nuts, and olives. Deficiencies in dietary copper can lead to anemia-like symptoms since copper is required to help uptake iron inside the body.



The brownish metal is also used to kill certain bacteria and fungi. Copper has been shown to be an effective agent in killing influenza, adenovirus, *E. coli* O157:H7, *Staphylococcus aureus* (MRSA), *Staphylococcus*, and *Clostridium difficile*. In fact, copper was shown to kill 99% of disease-causing pathogens within two hours of its cleaning application. Antimicrobial materials made from copper now are used as doorknobs and handles in hospitals to reduce the spread of disease in that environment.



In some patients with liver disease and other disorders, copper can build up in tissue. The area surrounding the iris of the eye is one such location. The copper build-up called Kayser-Fleischer rings can be seen in some individuals. The brownish discoloration at the edge of the colored part of the eye is evidence of the collection of copper in the tissue.

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Answers: Page 2 Answers: 1) b, 2) d, 3) c, 4) a, 5) a, China uses about 22% of the world's copper. Page 3 My Old Flame Answers: a) copper, b) lithium, c) sodium, d) potassium.

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