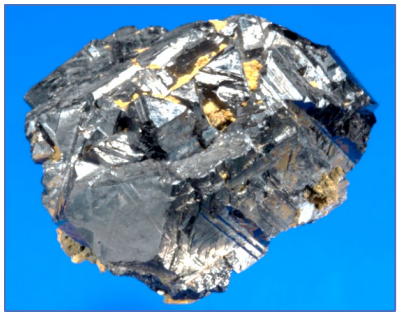
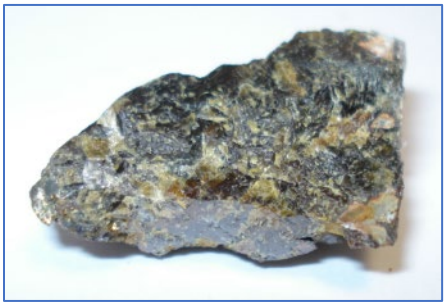
3. Sphalerite (zinc sulfide or ZnS)





Sphalerite is the most important ore mineral of the metal zinc. Its name comes from the Greek word *sphaleros,* which means deceiving, because sphalerite has a wide variety of appearances and can be difficult to identify in hand specimen. Its luster can range from submetallic to resinous, which means that the surface has the same appearance as resin (such as amber, which is fossilized resin) or a smooth-surfaced plastic. The zinc component can also be substituted for by variable amounts of iron, and the streak of sphalerite when rubbed on an unglazed ceramic streak plate can range from black to yellow. Nicknames of sphalerite are zinc blende and blackjack.

The metal zinc is silvery white in color and has many industrial uses. Adding a protective layer of zinc to steel and iron is called “galvanizing” and protects from rust and corrosion. Zinc oxide (ZnO) is commonly used as a paint pigment, in batteries, and for topically treating a variety of skin conditions, including itching, diaper rash, and dandruff. Zinc oxide is also used in sunscreen to physically block the damaging UV rays, and unlike chemical sunscreens, it is reef-safe, which means that the nanoparticles do not pose a danger to marine ecosystems. In US penny coins made after 1982, the center of the coin is made from a zinc alloy. Zinc chloride (ZnCl) is used for preserving wood.

Activities:

1-3: Check the date on a penny coin. Write the date here: _____ From what you read about the US penny (see 2. Copper), circle whether the penny has a zinc alloy center: Yes No

K-4: Look at some different types of nails at home or at a hardware store. Do they have a rough, silvery coating? Circle your answer: Yes No If yes, they are galvanized, which means they have a coating of zinc that helps prevent rust. If the package for the nails is available, check it to confirm your answer.

5+: The first commercial dry batteries were zinc-carbon batteries. Because these batteries work in any position, they enable portability of the devices they power. Check the batteries you have at your home or look at some in a store or online retailer. Do you find any zinc-carbon or zinc-chloride batteries (Hint: they are usually labeled “heavy duty”). Research why alkaline batteries were developed to substitute for zinc-carbon batteries in primary (nonrechargable) applications:

_____
_____.

3. Sphalerite continued

8+: Find zinc on the periodic table of the elements. Which would be heavier, a cubic centimeter of pure copper or a cubic centimeter of pure zinc? Explain how you know by the arrangement of the elements on the table: _____

_____.