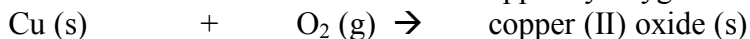


Lab: Statue of Liberty ctd..



After analyzing your petri dish for several days, answer the following questions:

- 1.) The green coloration on the surface of the copper (bare penny) is called a “patina.” It is the compound copper (II) oxide. It forms as a result of the oxidation of copper by oxygen in the air:



It is this reaction that has caused the Statue of Liberty in New York Harbor to turn green. The statue was originally a nice copper color when given to the U.S.A. by France in 1876. New York Harbor is a salt water harbor.

- a.) What does the Roman numeral “II” tell you about copper in the name *copper (II) oxide*? Give the appropriate chemical symbol as your answer. _____
- b.) What is the oxidation number of oxygen in the majority of compounds? _____
- c.) Write the chemical formula for copper (II) oxide. _____
- 2.) A man decided to wrap the wooden posts on his porch in a product designed to protect the wood. The product is made out of painted aluminum. He used iron nails (non-galvanized ones) to nail the aluminum sheets to the wood. After two years of weathering, the places where the nails penetrated the aluminum are corroding and crumbling.
- a.) In terms of the two metals and Table J, explain why this corrosion is happening.

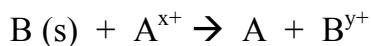
- b.) Explain why this problem could have been prevented if the spots where the nails were put in had been sealed with caulking.

Moped/IB questions:

Two metals in contact with each other and moisture will react in what is called a “galvanic reaction.” Metal A will be oxidized by the action of oxygen and with the help of the moisture.



Metal B will be oxidized as well, but this happens as it tries to restore electrons to the first metal.



This process can be helpful (as in the case of a ship hull being protected) or destructive... Based on the description of the corrosion problem in the conclusion section of this lab:

- 1.) Decide which metal is “A” and which is “B.”
- 2.) Write the reactions shown above using actual metals in place of A, A^{x+}, B and B^{y+}. Make sure you pay attention to proper ion charges (Fe becomes Fe²⁺).