



Extracting Minerals



Introduction:

Most minerals are not found in a pure form but are found mixed in with rocks because rocks are made up of minerals. In most mines the first thing that needs to be done is to crush the ore (the ore is the rock that contains small pieces of the desired mineral). The desired mineral can be extracted from the ore by using another material that "attracts" the desired mineral (the mining industry uses scrap iron, such as discarded cars, for this process), or by smelting (burning) the ore and the mineral evaporates out of the rock.

Materials:

Copper Sulfate water Iron nails Beaker

Prediction:

1. What will happen to the nail once it is placed in the copper sulfate solution?

Questions:

1. What is the copper sulfate representing in this demonstration?
2. What is the iron nail representing in this demonstration?
3. What happened to the nails after they were placed in the solution? What is the material on the nails?
4. What additional step would need to be performed to obtain copper useful for making copper wire or pennies?
5. This demonstration leaves two waste products, the acidic copper sulfate solution and the crushed ore, or "tailings." How might these "mine wastes" be dealt with? Do you know of any environmental affects that are caused by not cleaning up "mine wastes?"