EXPERIMENT 3.1

LEACHING THE COPPER ORE

AIM:

To separate the copper from the rock by crushing the rock into smaller pieces and dissolving the copper in sulphuric acid (very dilute and safe) to make a copper sulphate solution.

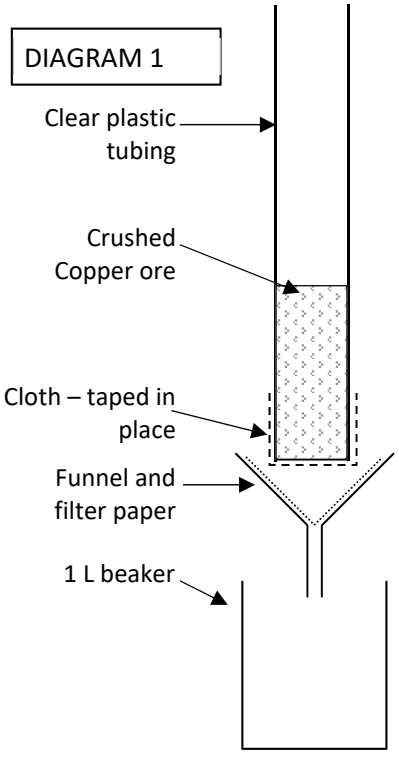
MATERIALS:

- Rocks of Copper ore
- 1 metre clear plastic 35mm tubing
- Mortar and Pestle
- 1 L and 500 mL beakers
- Filter paper and funnel
- Electronic balance (up to 200 gm)
- 3 small (~ 20 mL) sample bottles
- 12 cm piece of cloth (dishwashing cloth is ideal)
- Strong adhesive tape
- 500 mL measuring cylinder
- Labels

METHOD:

1. Weigh your rock. Mass of rock = _____ grams
2. Crush your rock with the mortar and pestle. You will probably need to do this in 3 parts due to the size of the mortar and pestle. A refinery would have a ball mill grinding the ore to a small granular size.
3. Arrange the tubing, 1 litre beaker, cotton wool, plastic webbing, filter paper and funnel, 1 litre beaker, and crushed ore as shown in diagram 1.
4. Slowly pour 500 mL of 0.01 M sulphuric acid into the top of the tubing. Observe the dilute acid moving through the ore, leaching the copper from the ore as soluble copper sulphate. The entire leaching process will take 10 minutes before your first leach solution has collected in the beaker below the ore.
5. Pour a few mls of this leach solution into one of your sample bottles. Label this sample as Leach 1.

DIAGRAM 1



6. Pour the leach solution back into the top of the tubing and repeat the process. Again after several hours or overnight, collect a sample of your second leach solution. Again pour a few mls of this solution into a sample bottle and label as Leach 2.
7. Repeat step 6 one more time – obtaining your third and final "leach solution". Pour off a third sample (labelled Leach 3), and pour the rest into a bottle labelled with your group name and "Leach 3 solution".
8. Take you apparatus apart, retaining the used ore in a sealed plastic bag clearly labelled with your groups name