# SSERC logo

**SSERC Risk Assessment** (revised version March 2018)

(based on HSE’s INDG 163 ‘Risk assessment - A brief guide to controlling risks in the workplace’)

2 Pitreavie Court, South Pitreavie Business Park, Dunfermline KY11 8UU

tel : 01383 626070 e-mail : [enquiries@sserc.org.uk](mailto:enquiries@sserc.org.uk) web : [www.sserc.org.uk](http://www.sserc.org.uk)

# 

|  |  |
| --- | --- |
| Activity assessed | Rocks to Riches |
| *Date of assessment* | 30th June 2020 |
| *Date of review (****Step 5****)* |  |
| *School* |  |
| *Department* |  |

| Step 1 | Step 2 | Step 3 | Step 4 | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| *List Significant hazards here:* | *Who might be harmed and how?* | *What are you already doing?*  *What further action is needed?* | *Actions* | | | | |
| *by whom?* | | *Due date* | | *Done* |
| Copper sulphate is harmful if swallowed, a skin/respiratory irritant and causes serious eye damage.  (The leachate produced is also copper sulphate) | Technician, teacher, pupil by splashes while preparing the solution. | Avoid breathing in any dust  Wear goggles (EN 166 3) |  |  | |  | |
| Solution 1 (A 1 mol l-1 solution of CuSO4) also causes serious eye damage. | Technician, teacher and pupils by splashes | Wear goggles (EN 166 3) |  |  | |  | |
| Copper carbonate is harmful if swallowed or inhaled | Technician and teacher by inhalation | Avoid breathing in any dust  Wear goggles (EN 166 3) |  |  | |  | |
| Powdered activated charcoal is flammable | Technician and teacher by inhalation | Keep away from sources of ignition. Avoid breathing in any dust, |  |  | |  | |
| Ores A, B & C have properties of thie components (CuCO3 and C) | Teacher and pupils by inhalation | Avoid breathing in any dust. Keep away from sources of ignition. |  |  | |  | |
| Solution 2 (1 mol l-1 Sulphuric acid) is irritant | Technician, teacher by splashes | Wear eye protection |  |  | |  | |
| Copper sulphate/ nickel sulphate mixture (leachate post electro-winning) is harmful and may cause serious eye damage | Technician, teacher and pupils by splashes | Wear goggles (EN 166 3) |  |  | |  | |

|  |
| --- |
| **Description of activity:**  Preparing standardised solutions of copper sulphate.  Determining the percentage of metal found in different ore samples by reacting the ore (mixture of sand and copper carbonate) with sulphuric acid.  Comparing the filtrate against the standardised solutions by eye colorimetry and finding the percentage of copper found in the original ore sample.  Using electricity to convert the copper ions found in the leachate into copper atoms on the negative electrode. |
| **Additional comments:**  Handle the activated charcoal in a well ventilated lab.  After experiments ensure hands are thoroughly washed.  Due to the particulate nature of the ores and silver sand ensure solvent extraction is carried out in a well ventilated lab.  Use only a low tension (LT) supply and not to exceed 16 volts during the electrolysis practical.  Due to the aerosol produced during the electrolysis of the leachate ensure this is carried out in a well ventilated lab.  Disposal - Larger quantities of the leachate (post electro-winning) needs to be packaged, labelled and arranged for removal by an approved contractor due to the presence of nickel salts that are produced during the electro-winning process. |