# 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’)

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| Activity assessed | Iron / Sulphur reaction |
| *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* |
| Iron is of no significant hazard but sulphur can be an irritant. The mix has the hazards of its components. | Technician or pupils, preparing reaction mix.  | Take care to avoid contact with hands. Wear gloves if skin is sensitive. |  |  |  |
| Sulphur vapour can burn to produce toxic sulphur dioxide. | Pupils / teacher by inhalation | Placing a plug of mineral wool in the top of the test tube will prevent sulphur fumes escaping and catching fire. |  |  |  |
| Using a hammer to break open the test tube can lead to shards of broken glass flying round. | Pupils/teacher when breaking open tubes to get reaction mix | Wear eye protection. Exercise care. If the tube is wrapped in a cloth or paper towel before being struck, any particles of flying glass will be kept to a minimum. |  |  |  |
| Potassium manganate VII is a powerful oxidiser and is harmful if swallowed.The 0.0002 Mol l-1 solution is of no significant hazard. | Technician, making up solutions. | Wear eye protection and possibly gloves (to avoid staining of skin). Avoid raising dust. Keep away from combustible materials |  |  |  |
| Copper II sulphate is harmful by ingestion and irritant to skin and respiratory system and causes serious eye damage.The 0.01Mol l-1 solution is of no significant hazard | Technician, making up solutions. | Wear goggles (EN 166 3) and possibly gloves. Avoid raising dust. |  |  |  |
| Silver nitrate an oxidiser and is corrosive to skin and eyes.The 0.05 Mol l-1 solution is of no significant hazard | Technician, making up solutions. | Wear goggles (BS EN166 3) and gloves. Avoid raising dust. Keep away from combustible materials |  |  |  |
| Lead nitrate is harmful by ingestion or inhalation, corrosive to the eyes, a reproductive toxin and an oxidiser as well as having long-term effects on the CNSThe 0.05 Mol l-1 solution is irritant and a reproductive toxin | Technician, making up solutions.Pupils/teacher by splashes when carrying out reaction | Wear goggles (BS EN166 3) and gloves. Avoid raising dust. Keep away from combustible materialsThe nature of the procedure and the small quantities involved make this a safe process but care should still be taken. Wear eye protection and gloves |  |  |  |
| Hydrochloric acid is corrosive and releases irritating fumesThe 1 Mol l-1 solution is of no significant hazard. | Technician, preparing 1 Mol l-1 solution. | Wear goggles (BS EN166 3) and gloves. Work in a fume cupboard. |  |  |  |
| Hydrogen sulphide gas is toxic. | Pupils / teacher by inhalation | Carry out the reaction with HCl in a fume cupboard – or use the microscale method for testing. |  |  |  |

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| **Description of activity:**A small amount of iron/sulphur mix is heated and reacted in a small borosilicate test tube. The tube is broken (if necessary) to obtain the contents. The contents can then be tested, in comparison with the original mixture, for magnetism and the production of H2S when added to acid. |
| **Additional comments:**Silver nitrate, lead nitrate and potassium manganate VII are harmful to the environment. Only washings from the experiment should be washed down the drain. Larger amounts should be kept for disposal. |