# 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 web : [www.sserc.org.uk](http://www.sserc.org.uk)

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| Activity assessed | Diffusion of Gases and liquids |
| *Date of assessment* | June 2024 |
| *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* |
| Nitrogen dioxide is toxic by inhalation. (Effects can sometimes be delayed by up to 72 hours) | Teacher/technician or learners by inhalation during experiment | Work in a fume cupboard (or a well-ventilated area for parts of the activity).Do not exceed the amount of reagents stated.Keep gas jar sealed when not in a fume cupboard. |  |  |  |
| Nitric acid is corrosive and oxidising | Technician by spillage/splashing while preparing the NO2. | Wear goggles (BS EN166 3) or a face mask and PVC gloves.  |  |  |  |
| Potassium manganate VII is harmful Cat 4 if swallowed and an oxidizing agent. | Teacher/learners by inhalation/ingestion while carrying out the activity. | The risk is low as only very small quantities are used.Wear eye protection. Avoid raising dust.Keep away from combustible materials. |  |  |  |
| Chromium potassium sulphate is a skin/eye irritant. | Teacher/learners by eye/skin contact while carrying out the activity. | The risk is low as only very small quantities are used.Wear eye protection. Avoid raising dust. |  |  |  |

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| **Description of activity:****Gas diffusion**1-2g of copper turnings (or ribbon) is placed in a gas jar and an measured amount of concentrated nitric acid is added. (The quantities ensure that the copper is in excess). This generates brown NO2 gas. The gas jar is sealed with a lid and then another is inverted over the top of it and the lid removed. This allows the gas to diffuse upwards into the upper jar.**Liquid diffusion**A small crystal of a coloured solid (potassium VII manganate, chromium potassium sulphate etc is added to a test-tube or beaker of cold water and observed. |
| **Additional comments:**Use of bromine in the gas diffusion experiment should be avoided due to its toxicity.If other solids are used for the diffusion experiment, the risk assessment needs to be amended accordingly. |