# 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 | Northern Lights |
| *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* |
| Concentrated hydrochloric acid is corrosive. | Teacher/technician via splashes. | Wear goggles (BS EN166 3) or a face shield for diluting concentrated acid and follow appropriate guidance. Wear goggles (BS EN166 3) when using solution. |  |  |  |
| Copper (ii) chloride is harmful if swallowed, a skin/respiratory irritant and causes serious eye damage. | Teacher/technician preparing solutions by inhalation or splashes. | Wear goggles (EN 166 3). Avoid raising dust. |  |  |  |
| 6M H2S04 is corrosive | Teacher/technician preparing/using solution by splashes. | Wear goggles (BS EN166 3) or a face shield for diluting concentrated acid and follow appropriate guidance. Wear goggles (BS EN166 3) when using solution. |  |  |  |
| Reaction mixture gives off hydrogen. | Teacher/technician when igniting the gas | Wear goggles (BS EN166 3) and gloves. Ignite gas at arm’s length |  |  |  |

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| **Description of activity:**This demonstration shows the displacement of copper from copper chloride by aluminium (which is higher in the reactivity series). The copper can be seen to form around the aluminium. The acid used which removes the aluminium oxide layer so the reaction can take place, will also in reaction with the aluminium produce hydrogen gas. This can be ignited to produce green/blue flames.1. Place conical flask on heat proof mat, surrounded by safety screen
2. Add water and then HCl (must do it this way round)
3. Add copper chloride
4. Add aluminium foil
5. Turn lights down (or if safe to do so off)
6. Let reaction happen for a minute then using a lit splint ignite the hydrogen gas that’s built up (this should be at arm’s length and from behind the screen)
7. This can be done a few times (remember to show the copper produced at the end, once the reaction has cooled down)
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| **Additional comments:**This reaction looks particularly good when the lights are dimmed or (better) switched off. |