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**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 | Copper and le Chatelier |
| *Date of assessment* | 8th December 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 II chloride is harmful (Cat 4) if swallowed or inhaled, A skin irritant (Cat 2) and causes serious eye damage (Cat 1) | Technician preparing solution  Demonstrator carrying out experiment. | Avoid raising dust or droplets. Wear goggles (EN166 3) and gloves consider when preparing solution from the powder.  Avoid splashes. If any solution gets on skin wash off immediately with copious quantities of water. |  |  |  |
| Hydrochloric acid is corrosive (liquid & vapour). | Technician preparing solution by splashes | Wear nitrile gloves and goggles (BS EN166 3). |  |  |  |

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| **Description of activity:**  A heated solution of copper II chloride is cooled and has concentrated hydrochloric acid added.  Some of the solution is placed in a test tube in an ice bath with a polystyrene lid. The top half of the tube is heated with a hair-dryer while the ice keeps the bottom half cool. The two halves of the test tube go different colours.  Alternatively, 2 tubes are placed in beakers of either boiling or iced water. |

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| **Additional comments:**  This is a safer, though not quite as good, alternative to using cobalt chloride: balancing between the green chloride complex and the blue water complex.  Copper compounds are hazardous for the environment but as the solution can be kept pretty much indefinitely, there is no need to dispose (unless contaminated). If it is needed, disposal need to be carried out by a licensed contractor. |