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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’)

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 | Gravimetric determination of nickel using dimethylglyoxime |
| *Date of assessment* | August 2022 |
| *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* |
| Nickel chloride is toxic if swallowed or inhaled, carcinogenic if inhaled, a mutagen and reproductive toxin, a skin irritant and sensitiser and causes organ damage to the lungs. | Technician while preparing solution by splashes or inhalation.Pupils by splashes or inhalation while carrying out experiment. | Avoid raising dust. Wear goggles (BS EN166 3) and gloves.The solution is less hazardous but still a carcinogen, mutagen, skin sensitiser, organ toxin and possibly a reproductive toxin. Inhalation though, is unlikely unless an aerosol is produced. Wear goggles (BS EN166 3) and gloves. |  |  |  |
| Dimethylglyoxime is a flammable solid and is toxic if swallowed  | Technicians while preparing solution. | Keep away from sources of ignition.  |  |  |  |
| The dimethylglyoxime solution is prepared in ethanol (IMS) which is highly flammable.IMS is also harmful if swallowed and can cause damage to organs. | Technicians while preparing solution or pupils while carrying out experiment by fire. | Keep away from sources of ignition.The toxicity is minor unless it is drunk in quantity. Working in a well-ventilated room will mitigate issues of inhalation. |  |  |  |
| Hydrochloric acid is corrosive to skin and eyes and produces irritating fumes.A 2 mol l-1 solution is of no significant hazard. | Technician preparing 2 mol l-1 solution by splashes or inhalation. | Work in a fume cupboard unless the volume is very small. Wear goggles (BS EN166 3) and gloves. |  |  |  |
| Hydrochloric acid is corrosive to skin and eyes and produces toxic fumes. | Technician preparing 2 mol l-1 solution by splashes or inhalation. | Work in a fume cupboard. Wear goggles (BS EN166 3) and gloves. |  |  |  |
| 2 mol l-1 ammonia causes serious eye damage and can produce irritating fumes | Pupils while carrying out experiment by splashes. | Wear goggles (BS EN166 3) and work in a well-ventilated laboratory. |  |  |  |

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| **Description of activity:**Nickel chloride is dissolved in water and an alcoholic solution of dimethylglyoxime is added along with ammonia to keep the solution alkaline.A red precipitate of the complex is formed. This is filtered off, dried and weighed and this information can be used to determine the amount of nickel in the original solid. |

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| **Additional comments:**Nickel compounds are toxic to the environment so the complex and any other nickel residues must be kept for uplift by a licensed waste contactor |