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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 | Ammonia fireflies |
| *Date of assessment* | 21st October 2021 |
| *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* |
| Ammonium dichromate is an oxidiser, acute toxin, (cat 3 by ingestion and cat 2 by inhalation), corrosive, carcinogen, mutagen, reproductive toxin, a skin sensitiser, a specific target organ toxin | Demonstrator by skin contact or inhalation while preparing the demonstration chromium III oxide. | Wear goggles (BS EN166 3) and gloves.  Avoid raising dust. Keep away from flammable substances. |  |  |  |
| Chromium III oxide is Acute toxin Cat 4 (oral)  Skin Sensitiser Cat 1 Skin / Eye irritant Cat 2  Reproductive toxin Cat 1B | Demonstrator / audience by inhalation during the experiment | Carry out on a small scale. Do not exceed the quantities stated.  Work in a fume cupboard or a well-ventilated laboratory. |  |  |  |
| Concentrated Ammonia is corrosive to skin and eyes and produces toxic and corrosive fumes | Demonstrator / audience by inhalation during the preparation and experiment | Wear goggles (BS EN166 3) and gloves.  Prepare the flask in a fume cupboard.  If the demonstration is carried out on the open bench keep the flask stoppered apart from the brief window where the chromium III oxide is added. |  |  |  |
| Nitric oxide and a small amount of nitrogen dioxide are also produced but only in small quantities | Demonstrator / audience by inhalation during the experiment | Work in a fume cupboard or a well-ventilated laboratory |  |  |  |

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| **Description of activity:**  Chromium III oxide is prepared by the decomposition of ammonium dichromate  A sample is heated strongly and the hot oxide is poured into a large flask of ammonia vapour where it produces a shower of sparks as it catalyses the oxidation of the ammonia. |

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| **Additional comments:**  Chromium III oxide as purchased will not work – it needs to be generated by the volcano reaction.  **Disposal**  Unreacted ammonium dichromate while preparing the chromium III oxide, if more than a sprinkling on the mat, needs to be kept for uplift for a licensed contractor.  The remainder can be washed to waste in a fume cupboard with large quantities of cold water. |