#### National Space Centre - Risk Assessment Form

#### General Risk Assessment Reference – G464

| **Location** | National Space Centre |
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| **Equipment or Activity to be assessed** | Oxygen – Hydrogen Mini-Pipette Rockets |
| **Description of Activity** | In this activity, students work in groups to produce and gather small amounts of oxygen and hydrogen from two chemical reactions, bubble these into a plastic pipette bulb, and launch using a piezoelectric launcher. All reactants are low concentration. |
| **Date of assessment** | 02/10/2024 |
| **Last review date (if applicable)** | 04/09/2023 |
| **Next review date** | October 2025 but earlier review date required following outcomes of accidents, absences and near misses, or changes to processes, work methods, materials, technology, equipment or legislation. |
| **Risk Assessment created by [name / date]** | Sophie Allan [02/10/2024] |
| **Authorised by Line Manager [name / date]** | Sophie Allan [02/10/2024] |
| **Authorised by Health and Safety Manager [name/ date]** | Katrina May Neve [02/10/2024] |

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| **What are the hazards?**  *Something with the potential to cause harm* | **Who might be harmed and how?** | **Control Measures**  *What is already in place to reduce the risk?* | **Additional Control Measures**  *What needs to be put in place to further reduce the risk?* | **Risk Rating**  *Refer to risk matrix below* | **Authorised by Health and Safety Manager** |
| Reactant: Vinegar/weak hydrochloric acid  (No more than 0.5 molar concentration if using hydrochloric acid) | Student doing reaction or others in room (very weak corrosive) | Eye protection to be worn by all, including teacher/deliverer  Hands to be washed should any of the reactant get on them.  All reactants should be used whilst standing up. |  | Likelihood: 2 Severity: 1  Risk Rating: 2  [Low] | Katrina May Neve  Health and Safety Officer  [02/10/2024] |
| Reactant: Magnesium ribbon | Student doing reaction or others in room – if left in prolonged contact with water, flammable gasses can build up. | Only give students small amounts of magnesium ribbon to use. Dispose of according to COSHH guidelines.  Make sure the room is well ventilated during activity.  All reactants should be used whilst standing up. | Make sure the room is well ventilated during activity. | Likelihood: 1 Severity: 1  Risk Rating: 1  [Low] | Katrina May Neve  Health and Safety Officer  [02/10/2024] |
| Reactant: Peroxide  Do not exceed 3% concentration | Student doing reaction or others in room (very weak corrosive) | Eye protection to be worn by all, including teacher/deliverer  Hands to be washed should any of the reactant get on them.  All reactants should be used whilst standing up. | Hands to be washed should any of the reactant get on them. | Likelihood: 2 Severity: 1  Risk Rating: 2  [Low] | Katrina May Neve  Health and Safety Officer  [02/10/2024] |
| Piezoelectric spark launcher | Holding the terminals could result in an extremely mild static shock. | Students to be closely supervised while launching. |  | Likelihood: 2 Severity: 1  Risk Rating: 2  [Low] | Katrina May Neve  Health and Safety Officer  [02/10/2024] |
| Water from launching | Small amounts of water are propelled backwards on launch. These could present a risk if the floor was to become wet. | Make sure a method of soaking up this water is present, and deal immediately with any spillages. |  | Likelihood: 1 Severity: 3  Risk Rating: 3  [Low] | Katrina May Neve  Health and Safety Officer  [02/10/2024] |

**Risk Rating Matrix**

**Risk = Likelihood of injury x Severity of injury**

**R = L x S**

**Low risk = 1 – 6, Medium risk = 8 - 12, High risk = 15 - 25**

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|  | | **S = Severity of injury** | | | | |
| **Minor injury or illness (1)** | **First aid injury or illness (2)** | **3-day injury or illness (3)** | **Major injury or illness (4)** | **Fatality, disabling injury, etc (5)** |
| **L = Likelihood of injury** | Very unlikely (1) | 1 = Low | 2 = Low | 3 – Low | 4 = Low | 5 = Low |
| Unlikely (2) | 2 = Low | 4 = Low | 6 = Low | 8 = Medium | 10 = Medium |
| Likely (3) | 3 = Low | 6 = Low | 9 = Medium | 12 = Medium | 15 = High |
| **Very likely (4)** | 4 = Low | 8 = Medium | 12 = Medium | 16 = High | 20 = High |
| **Almost certain (5)** | 5 = Low | 10 = Medium | 15 = High | 20 = High | 25 = High |

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|  | **Risk Rating Definitions and Guidelines** |
| **Low** | **Minor to no injury.**  This is an acceptable level of risk. No further controls are required as the risk rating cannot be reduced any further. However, it is advised continual monitoring occurs to ensure that no changes/deviation of control measures occur. |
| **Medium** | **An injury requiring further medical assistance or is a RIDDOR related incident.**  It is advised that further control measures are implemented to reduce the risk rating to a low a level as possible. If the risk cannot be reduced to lower than a medium, then on-site monitoring should occur to ensure that all stipulated controls are bring adhered to. |
| **High** | **Death, paralysis, long term serious ill health.**  This is an unacceptable risk rating. Urgent interim controls should be implemented to reduce the risk so far as is reasonably practicable. If the risk rating cannot be reduced to lower than high, then a documented safe system of work should be implemented to control the activity. It may be necessary to seek further professional advice. Serious consideration should be given to the validity of carrying out the activity at all. Regular Monitoring of the activity should occur. |