# 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 | Hydrogen Balloons |
| *Date of assessment* | 3rd February 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* |
| **Preparing balloons**  Hydrogen is extremely flammable and a hydrogen/air mixture is explosive. | Teacher/technician – filling balloon | Wear eye protection.  Keep away from any source of ignition.  Using a cylinder – if filling more than one balloon this is best done outside.  Using hydrogen generator –  **Ensure you are not getting a hydrogen/air mixture!**  If filling several balloons – remove filled ones to a safe distance.  (If using hydrogen generator) Wear eye protection. |  |  | |  | |
| Hydrochloric acid is an irritant over 2.85 mol l-1. |  |  |  |  | |  | |
| **Igniting balloons**  Hydrogen is extremely flammable and a hydrogen/air mixture is explosive. | Teacher/audience by burning/exploding balloons | Keep balloons away from sources of ignition until ready to be ignited.  Teacher wear eye and ear protection.  Warn audience that there might be a loud bang and they should cover their ears. (Pure hydrogen makes a loud ‘woof’ but if air has got in, it will be louder.)  Audience should be several metres back.  Tie balloon so it is not too close to the ceiling.  Ignite balloon at a distance – a splint attached to a metre rule / broomstick for instance. |  |  | |  | |

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| **Description of activity:**  Balloons are filled with hydrogen and then ignited. |
| **Additional comments:**  Introducing a small amount of air/oxygen into the mixture is acceptable but **DO NOT try this with a stoichiometric ratio of H2/O2**.  Exploding stoichiometric mixtures of hydrogen and oxygen on a large scale can shatter glass apparatus and laboratory windows (flying glass may cause injury) and permanently damage the hearing of people in the same room. It is recommended that this reaction is done ONLY on a small scale – contact SSERC for details. |