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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 | Concrete chemistry |
| *Date of assessment* | 20th August 2014 |
| *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* |
| Cement contains calcium oxide and hydroxide which are corrosive when wet | Technicians while preparing mortar mix and/or pupils while making the cement bars | Technicians wear goggles (BS EN166 3) and gloves.Pupils should be protected from this as the mixing happens inside a ziplock bag. If there is any danger then, too, should wear goggles and gloves. |  |  |  |
| Dust, if inhaled, can lead to inflammation of mucous membranes | By inhalation: Technicians while preparing mortar mix and/or pupils while making the cement bars | Technicians work with care and avoid raising dust. Pupils should not have a problem as long as the mixing is carried out (as described, in a plastic bag on the small-scale described.. |  |  |  |
| Soluble chromium(VI) (chromate) compounds are present in cement in trace amounts and are known sensitisers for allergic dermatitis. | Technicians while preparing mortar mix and/or pupils while making the cement bars | This is unlikely at the level of exposure involved so no particular precautions are needed. |  |  |  |
| Physical abrasion, by rubbing wet or dry cement or concrete against the skin, can lead to irritant dermatitis. | Pupils when handling their cement bars | As long as they handle them with a reasonable amount of care, this should not be a problem. |  |  |  |
| Risk of flying particles from testing | Pupils when bar breaks | Wear eye protection. |  |  |  |
| Phenolphthalein solution is flammable | Pupils while testing for carbonation | Keep away from sources of ignition. Using a dropping bottle as well should ensure no chance of fire. |  |  |  |

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| **Description of activity:**Pupils add water to a prepared mortar mix (or prepare their own) in a ziplock bag. They mix the water inside the bag (avoiding contact with skin< and then cut off a corner of the bag and pour it into a mould to set.Once set, pupils carry out a series of tests on the cement/concrete bars. |

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| **Additional comments:**The experiment as described uses ‘Prompt Natural Cement’ as this sets extremely rapidly: being hard within 5 minutes. It can be successfully carried out with normal, Portland cement but the bars will need longer to set – about 2 days or more is best. |