



***Empiribox***

**Nurturing Future Scientists**

**Forces, Magnetism & Space**

**Risk Assessment**

Risk assessments are provided in good faith. Employees must follow the risk assessment process identified by their employer

<b>GENERAL SAFETY INFORMATION</b>			
<b>Personal Protection</b>			
Eye protection	X	Gloves	X
<b>Waste Disposal Procedures</b>			
All waste can be disposed of in the normal waste stream			
<b>First Aid</b>			
First aid procedures in the event of an accident: See school health and safety protocols and First Aiders:			
Name of First Aider:			
<b>Action required in the event of equipment failure</b>			
<ul style="list-style-type: none"> <li>✓ Effervescent tablets don't work: Simply use another tube of tablets.</li> <li>✓ Sometimes the film canisters leak. If this happens, simply use another, although the leaking canister is an opportunity to explain that pressure cannot be built up sufficiently to work.</li> </ul>			
<b>Out of hours' emergency shut down procedure</b>			
In case of emergency please contact			
<ol style="list-style-type: none"> <li>1. Head teacher:</li> <li>2. Dan Sullivan – 0791 3090553</li> <li>3. County science advisor:</li> </ol>			
<b>Sources of information</b>			
Forces Lesson Plans – Lessons 1 & 2			
<b>ESSENTIAL RISK ASSESSMENT DEFINITIONS</b>			
<p><b>*HAZARD</b> – anything that is likely to cause harm. Each demonstration/experiment will have hazards associated with it, e.g. chemical, electrical, loud noises, naked flames, smoke. The assessor should try to think laterally about non-obvious hazards, e.g. if soap bubbles are used these might make the floor slippery.</p>			
<p><b>*WHO MAY BE HARMED</b> – different groups of people may be harm at different times:</p> <p>Demonstrators – at risk at all times</p> <p>Helpers - at risk during set up and clear away times and when aid is required during demonstrations</p> <p>Audience – at risk during the demonstration</p> <p>Members of the public – at risk if in the vicinity</p> <p>Audience at home – at risk if members of the audience try to repeat the experiments at home.</p>			
<p><b>*IS THE RISK ADEQUATELY CONTROLLED</b> – The hazards of each experiment are identified along with the precautions that will be taken to protect them from harm. Some may be generic and apply to the whole demonstration such as wearing eye protection and others may focus on a specific hazard in the demonstration.</p>			
<p><b>*WHAT FURTHER ACTION IS NECESSARY</b> – Review the risk assessment at venue and update if necessary. Also, new equipment or a fresh batch of chemicals and procedures will lead to new hazards so the risk assessment is an ongoing process.</p>			

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<b>I have read this risk assessment and accept all of the guidance set out and believe that if I carry out the experiments and demonstrations as stated above, in the lesson plan and as explained and demonstrated by the visiting science teacher then this will be sufficient to perform the above experiments and demonstrations in such a way as to minimize the risk to all those involved.</b>	
<b>Teachers Name (print)</b>	<b>Teachers signature</b>
IF SCHOOL POLICY DICTATES THAT ALL RISK ASSESMENTS ARE CHECKED BY THE HEADTEACHER THEN PLEASE COMPLETE BELOW.	
<b>HEAD Teachers Name (print)</b>	<b>HEAD Teachers signature</b>
DATE	

Written by Mark Inder  
Empiribox Ltd

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RISK ASSESSMENT – LESSONS 1 & 2 – EGG & FLASK AND ROCKET POPPERS											
<b>Demonstration</b>						<b>Class Investigation</b>					
Egg & Conical Flask						Effervescent Tablet Film Canister Poppers					
<b>Risk Category</b>											
High		Med		Low	x	High		Med		Low	x
Under atmospheric pressure, a hard boiled egg is forced into a conical flask using a little burning paper. It is then forced out of the flask by heating the base with a small butane burner whilst upside down.						Effervescent Vitamin C tablets (or Sodium bicarbonate + Citric acid mixtures) are placed inside film canisters with water and the build up of gas causes the canister lid to explosively pop off					
<b>HAZARDS* (see definition below)</b>											
List hazards here. List only hazards which could reasonably be expected to result in significant harm under the conditions in the venue of the demonstration / experiment											
<ol style="list-style-type: none"> <li>There is the potential danger of the film canisters flying off into pupils faces.</li> <li>All spillages need to be mopped up from table tops and floors as soon as they occur to prevent the danger of slipping.</li> <li>Teachers / Demonstrators should not forget that the conical flask will remain quite hot and be a burn hazard sometime after it has been heated to expel the egg, and so should leave the flask to cool for 5 mins after the demo.</li> </ol>											
<b>Chemicals / Substances</b> - Are chemicals/substances hazardous to health to be used?										No	
If YES, you must complete a COSHH form available from the H.S.E. office. <a href="http://bit.ly/COSHH-Form">bit.ly/COSHH-Form</a> Please list chemicals/gases/substances to be used.											
There are unlikely to be any allergic reactions to Vitamin C or any ingredient in the effervescent tablets.											
<b>Biological Substances</b> – Are biological substances to be used?										No	
<b>Electrical</b> – Is electrical equipment to be used?										No	
<b>Other hazards</b> – Are there any other hazards which pose unusual risks?										Yes	
A pressurized butane gas canister is used. This must be operated according to the instructions and when the demonstration is finished, the gas valve removed completely.											
<b>Who may be harmed</b> - List here groups of people who are especially at risk from the hazards that have been identified:											
<ol style="list-style-type: none"> <li>Pupils – if not acting according to the advice set out above.</li> <li>Teacher – if tongs / towel / clamp stand are not used to handle the flask after heating.</li> <li>All people in the class if the floor becomes wet.</li> </ol>											
<b>IS THE RISK ADEQUATELY CONTROLLED?*</b>						YES / NO					
All teachers conducting this demonstration / experiment for the first time to print it off and circle the above statement in ink and date it below. If this has been conducted before, simply sign and date it on day of lesson.											

## RISK ASSESSMENT – LESSONS 3 & 4 – Friction

<b>Demonstration</b>						<b>Class Investigation</b>							
<b>Risk Category</b>													
High		Med		Low	x	High		Med		Low	x		
The teacher will move a vase that has been placed upon a cloth to the edge of a table. They will then whip the cloth out from under the table without smashing or indeed moving the vase.						Pupils will design and make their own cars from simple materials. The cars will be powered by balloons. They will then investigate the effects of friction on the cars by releasing them on different surfaces.							
<b>HAZARDS* (see definition below)</b>													
List hazards here. List only hazards which could reasonably be expected to result in significant harm under the conditions in the venue of the demonstration / experiment													
<ol style="list-style-type: none"> <li>There is an obvious risk that if the vase smashes, broken pieces will fly off in different directions. Ensure pupils are at least 2m away from the demonstration. Also ensure the table is not wet.</li> <li>The kebab sticks have sharp edges that can pierce the skin. Advise caution when handling.</li> </ol>													
<b>Chemicals / Substances</b> - Are chemicals/substances hazardous to health to be used?										No			
If YES, you must complete a COSHH form available from the H.S.E. office. <a href="http://bit.ly/COSHH-Form">bit.ly/COSHH-Form</a> Please list chemicals/gases/substances to be used.													
<b>Biological Substances</b> – Are biological substances to be used?												No	
<b>Electrical</b> – Is electrical equipment to be used?												No	
<b>Other hazards</b> – Are there any other hazards which pose unusual risks?												No	
<b>Who may be harmed</b> - List here groups of people who are especially at risk from the hazards that have been identified:													
<ol style="list-style-type: none"> <li>Pupils – if not acting according to the advice set out above.</li> <li>Teacher – if not acting according to the advice set out above.</li> <li>All people in the class if the floor becomes wet.</li> </ol>													
<b>IS THE RISK ADEQUATELY CONTROLLED?*</b>						YES / NO							
All teachers conducting this demonstration / experiment for the first time to print it off and circle the above statement in ink and date it below. If this has been conducted before, simply sign and date it on day of lesson.													

