

Dr Mark's INSPIREeducation™ - RISK ASSESSMENT

INSPIREscience™ (& INSPIREscience&maths™)

COOL SCIENCE SHOWS, WORKSHOPS & TEACHERS' CPD

Provider Name: **Dr Mark Biddiss**
(Dr Mark's INSPIREeducation™, INSPIREscience™, INSPIREmaths™)

Presentation: **Dr Mark's COOL SCIENCE (& COOL SCIENCE & MATHS) SHOWS, HANDS-ON PUPIL WORKSHOPS & TEACHERS' CPD TRAINING**

Potential Minor Hazard Sources:

SHOWS:-

1. **Burning Butane Gas (ONLY SOMETIMES DEMONSTRATED)**
2. **Small candle flame and burning base of paper or plastic drinking cups, and rubber balloons.**
3. **Heat from focussed light from Overhead Projector Lamp, used to burst balloon (and occasionally ignite paper).**
4. **Launch of small plastic bottle rocket from inclined plastic guttering ramp (away from audience) using water and bicycle tyre pump. Occasional launch vertically into the air out in playground or playing field area.**
5. **Effervescent tablet in small plastic film canister with water resulting in small pressure 'explosion' of the sealed plastic canister, propelling bottom section of canister high into the air, which frequently lands in the audience area.**
6. **Small Spillage of Water (possibly resulting in slippery floor).**
7. **Bursting Standard-size Balloons (possibly resulting in balloon rubber fragments flying into audience and/or stress caused by the loud noise resulting).**
8. **Cutting Drinking Straws (possibly resulting in small fragments of plastic drinking straw flying into audience).**
9. **'Banging Paper' demonstration, resulting in relatively loud bang which may startle and stress some people.**

PUPILS' HANDS-ON WORKSHOPS & TEACHERS' CPD TRAINING (items below may not all be included in the same session):

1. **Launch of small plastic bottle rocket from inclined plastic guttering ramp (away from audience) using water and bicycle tyre pump. Occasional launch vertically into the air out in playground or playing field area.**
2. **Effervescent tablet in film canister with water resulting in small pressure 'explosion' of the sealed canister propelling bottom section of canister high into the air**
3. **Small Spillage of Water (possibly resulting in slippery floor)**
4. **In some activities, participants need to blow rapidly and repeatedly through drinking straws – can cause mild 'hyperventilation' symptoms, such as slight dizziness.**
5. **Use of small safety scissors by pupils to cut drinking straws and paper**
6. **Use of latex balloons**
7. **Standing on gym benches in the 'Flying Flipping Fish' experiment**
8. **Use of saturated 'Barax' (sodium tetraborate decahydrate) and water solution, and PVA white glue – may act as mild skin irritant in some very rare cases.**

Provider Signature:

Date: **8th September 2006**

Hazard Likelihood	Severity/Consequences	Risk Score
1	1-2	2-3
Known		
Accidents/Incidents NONE		
Existing controls		Control Effectiveness
Personal Control by Presenter during the show		High
Resultant Conclusions		
Negligible Risk		
Action		
Continuous standard monitoring by presenter		
Hazard Likelihood	Severity/Consequences	Control Effectiveness
<ol style="list-style-type: none"> 1. Highly Unlikely 2. Remote Possibility 3. Occasional Occurrence 4. Fairly Frequent 5. Frequent & Regular 6. Almost a Certainty 	<ol style="list-style-type: none"> 1. Negligible Injuries 2. Minor Injuries 3. Major Injuries 4. Single fatality 5. Multiple Fatalities 6. Multiple Fatalities (inc. off-site) 	A. Automatic System H. High M. Medium L. Low

COSHH ASSESSMENT

(Product Safety Data Sheet to be attached to this assessment)

Name & Workshop/Lecture/Show_ **'Cool Science Shows' & 'Cool Science & Maths Shows'**

Product Information

1. Product (trade name) Butane Gas (Lighter fuel)
2. Container Type / Size Small Pressurised Gas Canister
3. Description Lighter Gas
4. Use Fire Demonstration ('Hot Hands', 'Burning Bubbles', 'Bottled Fire' & 'Hot Drink')
5. Users Presenter ONLY (Audience is not told/shown what flammable substance is used)

Toxicity (tick box) Very Toxic Toxic Harmful
 Corrosive Sensitising Irritant

Health Hazards: Harmful while burning

First Aid Procedures

Eyes: Cold Water
 Skin: Cold Water
 Ingestion: N/A
 Inhalation: N/A

Control Measures training exposure monitoring health surveillance
 fume cupboard local exhaust ventilation gloves safety glasses
 safety goggles dust mask respiratory protection overalls/lab coat

Other:

Fire Is substance flammable? YES / NO Explosive? YES / NO
 Extinguisher to be used: - water foam powder CO₂ Fire Blanket

Disposal Procedures N/A

Comments and Risk Assessment
 These presentations have been performed by Dr Mark Biddiss hundreds of times since 1997 and there has never been an accident.

 Regarding the fire, the butane gas is largely consumed within about 5-10 seconds. Therefore the hazard is negligible.

Action
NONE

 To be completed by: _____ Date: _____
 Risk Rating: LOW MEDIUM HIGH

Signature Dr M Biddiss Date 8th September 2006

COSHH ASSESSMENT (contd)

(Product Safety Data Sheet to be attached to this assessment)

Name & Workshop/Lecture/Show_ **'Cool Science Shows' & 'Cool Science Hands-On Workshops'**

Product Information 6. Product (trade name) <u> 'BORAX' – Sodium Tetraborate Decahydrate </u> 7. Container Type / Size <u> Small card/plastic container </u> 8. Description Sold as 'Universal Household Cleaner' – in powdered form 9. Use _In shows and workshops to mix with PVA glue to make 'SLIME' 10. Users <u>Presenter and workshops participants</u>	
Toxicity (tick box) <input type="checkbox"/> Very Toxic <input type="checkbox"/> Toxic <input type="checkbox"/> Harmful <input type="checkbox"/> Corrosive <input type="checkbox"/> Sensitising <input checked="" type="checkbox"/> <u>Irritant</u>	
Health Hazards: In rare cases can act as mild irritant to skin	
First Aid Procedures Eyes: <u> Cold Water </u> Skin: <u> Cold Water </u> Ingestion: <u> N/A </u> Inhalation: <u> N/A </u>	
Control Measures <input checked="" type="checkbox"/> <u>training</u> <input type="checkbox"/> exposure monitoring <input type="checkbox"/> health surveillance <input type="checkbox"/> fume cupboard <input type="checkbox"/> local exhaust ventilation <input checked="" type="checkbox"/> <u>gloves</u> <input type="checkbox"/> safety glasses <input type="checkbox"/> safety goggles <input type="checkbox"/> dust mask <input type="checkbox"/> respiratory protection <input type="checkbox"/> overalls/lab coat Other: Use of close-fitting rubber gloves where applicable for a particular individual	
Fire Is substance flammable? YES / NO Explosive? YES / NO Extinguisher to be used:- <input type="checkbox"/> water <input type="checkbox"/> foam <input type="checkbox"/> powder <input type="checkbox"/> CO ₂ <input type="checkbox"/> Fire Blanket	
Disposal Procedures <u> N/A </u>	
Comments and Risk Assessment These presentations have been performed by Dr Mark Biddiss hundreds of times since 1997 and there have never been any reported instances of skin irritation.	Action NONE To be completed by: _____ Date: _____ Risk Rating: <u>LOW</u> MEDIUM HIGH
Signature _____ Dr M Biddiss Date 8th September 2006	

COSSH ASSESSMENT (cont)

Additional information
Details of exposure Monitoring:
Maintenance of Control Measures:
Health Surveillance Details:
General: The show, hands-on pupil workshops and teachers' CPD training sessions are very tightly controlled and monitored by the presenter. The audience and all possibly flammable materials are placed a safe distance from the fire demonstrations. A fire extinguisher is always immediately to hand.