

Equipment / Activity / Area being assessed	Destination Space – Whoosh bottle demo	Risk Assessment No	ED-I215
Location	Eureka! Studio theatre	COSHH assessment	Isopropanol – COSHH sheet in P&L dept RA folder Copies also in file in Projection room
Who is exposed?	Presenters and Audience Members from family groups		
Date of assessment	29 November 2016		
Assessor's name and job title	Jenny Parker, Play & Learning Manager		

Procedure for demo:

- Use a 16 - 20 litre plastic bottle from a water cooler. It should be inverted to allow any remaining water to drain and then left upright for several days so that it dries completely.
- Add 30 ml of the alcohol to be investigated to a beaker. Pour the alcohol into the bottle, put plastic cup over the end to prevent liquid from escaping.
- Spend the next couple of minutes shaking & rotating the bottle to get as much of the alcohol evaporated as possible.
- Remove the cup and pour out any remaining alcohol. Put an empty cup over the end of the bottle
- Pour the remaining alcohol back into the bottle and screw the lid back on.
- Stand the whoosh bottle on the ground at least 3metres away from audience.
- Light a splint on the end of a metre ruler and remove the cup from the top of the bottle.
- Standing at arm's length light the whoosh bottle by putting the splint about 2cm into the top of the neck.
- Stand back and observe the whoosh
- After the alcohol has burned the water formed in the combustion reaction can be poured out (the bottle may be quite warm) If the bottle is left for several minutes then a cloud of moisture will form inside.
- At the end of the workshop thoroughly rinse out the bottle and allow it to dry fully before re-use

Risk = Likelihood of injury x Severity of injury	R = L x S	Low risk = 0 – 6	Medium risk = 7 - 12	High risk = 13 - 25
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		S = Severity of injury					
		No injury or illness (0)	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	Zero to very low (0)	0 = Low	0 = Low	0 = Low	0 = Low	0 = Low	0 = Low
	Very unlikely (1)	0 = Low	1 = Low	2 = Low	3 = Low	4 = Low	5 = Low
	Unlikely (2)	0 = Low	2 = Low	4 = Low	6 = Low	8 = Medium	10 = Medium
	Likely (3)	0 = Low	3 = Low	6 = Low	9 = Medium	12 = Medium	15 = High
	Very likely (4)	0 = Low	4 = Low	8 = Medium	12 = Medium	16 = High	20 = High
	Almost certain (5)	0 = Low	5 = Low	10 = Medium	15 = High	20 = High	25 = High

	Hazard	Control Measures already in place to control the risk	What additional Control Measures are required?	Risk rating (High, Medium, Low)	Completed/ Escalated to:
1	Isopropanol is a flammable liquid	Isopropanol to be stored in the COSHH cupboard in numbered bottles in the technicians workshop when workshops not taking place Enablers must ask a Duty Manager/Duty Technician to authorise removal of isopropanol from COSHH cupboard & witness its return by filling in signing in/out form	Isopropanol must not be left in the theatre unattended. In between sessions bottle must be returned to COSHH cupboard & signed in/out but doesn't need DM/DT to authorise each time. Only 1 bottle of isopropanol to be stored in COSHH cupboard at a time & regular checks made to ensure this is the case	L = 2 S = 2 R = 4 Low risk	Jenny Parker/Duty Manager/Duty Technician
2	Bottle may melt or catch fire	Use a 16-20 litre plastic bottle from a water cooler Bottle must be made of polycarbonate. Check bottles for signs of damage, frosting or cracking – do not use damaged bottles. Excess liquid alcohol must be removed from the bottle before the mixture is ignited. If left in bottle burning liquid may melt plastic. Never add pure oxygen to the bottle: use alcohol/air mixtures only.		L = 2 S = 4 R = 8 Medium risk	Jenny Parker/Duty Manager/Duty Technician
3	Ceiling could catch fire	The bottle must be placed on the floor – never on a table. Check that there is nothing on the ceiling over the demonstration area that could be set alight.		L = 2 S = 5 R = 10 Medium risk	Jenny Parker/Duty Manager/Duty Technician

4	Presenter and/or audience may get splashed with isopropanol	Ensure audience is at least 3m away from demonstration area Presenter to wear eye protection After rolling the bottle, the vapour pressure inside may cause alcohol to spray out when the stopper is removed. Take care to avoid spraying yourself or the audience. Wipe off any alcohol that splashes on the outside of the bottle.	Paper towels or anything used to wipe up excess alcohol should be placed in separate bin and this bin to be given to Technicians so they can dispose of appropriately.	L = 2 S = 2 R = 4 Low risk	Jenny Parker/Duty Manager/Duty Technician
5	Injury to presenter lighting the alcohol	Presenter must use a splint taped to the end of a metre ruler and use this at arm's length. Make sure the presenter removing the cup is at a safe distance before igniting If the alcohol fails to ignite – DO NOT use a lighted match, apologise to audience and move on. DO NOT attempt the demo again		L = 2 S = 4 R = 8 Medium risk	Jenny Parker/Duty Manager/Duty Technician
6	Burning of isopropanol causes small amount of smoke and fumes. This could be unpleasant to visitors/staff and set off fire alarm	Smoke detectors in theatre to be isolated on days when this activity is taking place. Theatre fire doors to be opened in between shows to allow fresh air to circulate.	Play & Learning Manager to alert technical team as to when detectors need to be isolated. Enablers to also check this has been done as part of their set up checks.	L = 2 S = 2 R = 4 Low risk	Jenny Parker/Duty Manager/Duty Technician
7	Fire fighting procedures	Fire blanket to be available in theatre when this demo is in use In case of fire, staff should evacuate the area as normal and not attempt to extinguish the fire.	Senior Management decision that staff should not attempt to fight any fire	L = 2 S = 4 R = 8 Medium risk	

Sign-off of risk assessment

Review by Line Manager (Name, job title and date)	
Review by Senior Manager (Name, job title and date)	

Next Review date:

Signed by members of the delivery team:

Name	Signature	Date