Risk Assessment

Risk Assessment for the activity of:	**StageSoc Pyrotechnics B General Pyrotechnic Effects** Use of T1 and T2 pyrotechnic effects for use during a theatrical performance, during and after the performance (rigging and de-rigging), during rehearsals and training exercises.	**Date:**	**30/03/2026**
Venu:	**The Cube, Building 42 University Rd, Southampton SO17 1BJ**		
Group Name:	**SUSU Stage Technicians' Society**		
Assessor:	**Rubens Pirie** **(ASP Member 2025186)**		

PART A - Risk assessment

(1) Risk Identification			(2) Risk assessment					(3) Risk management				
			Inherent					Residual				
Hazard	**Potential Consequences**	**Who might be harmed (See Risk Groups section)**	**Likelihood**	**Impact**	**Score**	**Control Measures**	**Body Responsible**	**Likelihood**	**Impact**	**Score**	**Further Controls**
Section 1 - General Pyrotechnic Effects											
Ignition of pyrotechnic articles during storage	Burns, damage to property and major injuries or death resulting from fire	X	4	5	**20**	Pyrotechnic articles to be stored in accordance with manufacturer's instructions, and following HSE and industry guidance.	Pyrotechnician	1	5	**5**	Explosive mixtures contain oxidiser, rendering external fire fighting measures ineffective. Fires of pyrotechnic articles must be allowed to burn, however nearby items can be extinguished to contain a fire.
						Keep articles in the manufacturer provided packaging, with appropriate labelling.	Pyrotechnician				
						Keep stored in a cool dry place away from sources of ignition, heat and other inflammable materials.	Pyrotechnician				
						Follow MSDS recommendations.	Pyrotechnician				
						Only suitable competent persons to handle pyrotechnic articles.	Pyrotechnician				
						Ensure appropriate fire extinguishers are available to tackle fires in the vicinity of pyrotechnic articles.	Pyrotechnician				
						Do not attempt extinguishing of pyrotechnic articles themselves, allow to burn out.	Pyrotechnician				

Injury from debris	Minor injuries from casings or debris	A B C X	5	4	20	Identify effects which have a definite capacity to produce debris, adjust safety distances accordingly.	Pyrotechnician	1	4	4	All effects have the capacity to produce some debris (parts of packaging etc.). However other effects due to their nature produce substantial amounts of kinetic debris, such as maroons. Other effects produce debris during operation (e.g. confetti) which is safe to land on people, but unsafe if fired directly at them.
						Ensure effects are not fired directly at people.	Pyrotechnician				
						Use a bomb tank for maroons.	Pyrotechnician				
Fire caused by effect / fallout	Fire causing destruction of property and treat to life	A B C G X	4	5	20	Identify which products in use have the capacity for hot fallout.	Pyrotechnician	1	5	5	Safety briefing to include specific mention of escape procedures.
						Ensure that all materials in the area of effect are checked to determine if they are combustible.					
						All combustibles in the effect area are treated with fire retardant, or are removed.	Pyrotechnician				
						If combustibles are brought within the effect area during the performance (at other times), ensure that a clear checklist is made, to check if nothing has been left behind.	Pyrotechnician				
						Have appropriate fire extinguishers readily to hand by persons that know how to use them.	Pyrotechnician				
						Cover adjacent effects if necessary with a heat-proof protective cover.	Pyrotechnician				
						All emergency exits must be kept clear and be appropriately signed.	Event Technician				
						Person firing to perform additional independent checks of escape routes before performances.	Pyrotechnician				

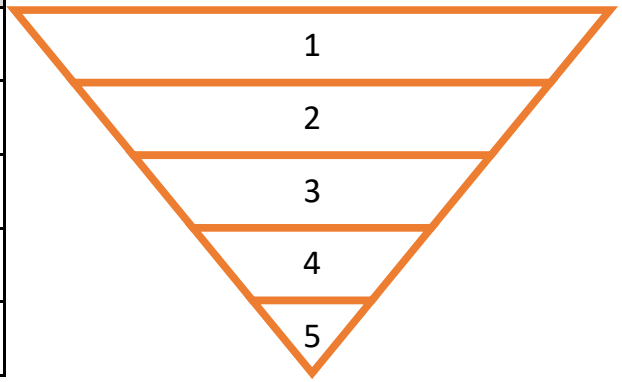
Injury from firing directly at a person	Minor to major injuries (particularly burns) from being within direct line of a fired effect	A B C X	4	4	16	Establish clear boundaries during rehearsals which all persons must be clear of during the time around firing.	Pyrotechnician	1	4	4	In some cases it is not possible to perform a test firing. Safe distances can be determined from prior experience with the effect (prior firings) or from manufacturer information.
						Provide a safety briefing to warn all company persons of the dangers of the effects, and to always treat them as live if seen loaded.	Pyrotechnician				
						Safe distance to effect to be determined by test firing if possible.	Pyrotechnician				
						The person firing the effect must have line of sight to the effect on stage (or have spotters with a reliable means of communication).	Pyrotechnician				
						If there is any doubt of on-stage clearances, the effect must not be fired.	Pyrotechnician				
						Establish a clear, unambiguous, instruction to fire.	Pyrotechnician				
						If in any doubt over an instruction to fire, do not fire the effect.	Pyrotechnician				
						Extensively rehearse all sequences with effects.	Pyrotechnician				
						Ensure all rigging points for effects are securely fixed to prevent change of firing direction and to allow for any forces experienced during firing.	Pyrotechnician				
						Ensure only competent persons with specialist knowledge are allowed to supervise firing of effects.	Event Technician				

Failure of an effect to fire (misfire)	Major injuries caused by an effect that fires without proper control	A B C X	3	3	9	Store effects according to manufacturer instructions.	Pyrotechnician	1	3	3	Soaking leeches out the nitrates within the explosive rendering it safe. Nitrated water can be readily disposed on outside.
						Determine an appropriate course of action for a misfired effect (leave in situ, remove from stage, etc) depending on stage activity after the proposed fitting time and opportunity for safe removal.	Pyrotechnician				
						Misfired effects are to be left for 10mins to ensure that they have no delayed reaction to firing stimulus.	Pyrotechnician				
						After waiting, misfired effects are to be packaged up and disposed of. Disposal by means of soaking in water.	Pyrotechnician				
						Perform a continuity test as soon as possible after rigging.	Pyrotechnician				
Tampering of effects	Major injuries or fire caused by unsupervised effect firing	A B C G X	4	5	20	Restrict access to rigging points, circuit locations and firing positions if possible.	Pyrotechnician	1	5	5	
						Ensure that effects are kept in a secure location or are guarded.	Pyrotechnician				
						Rig effects as close to the performance time as is reasonably partible.	Pyrotechnician				
						Audit any and all use.	Pyrotechnician				
						Limit access to firing system and safety keys to designated persons.	Pyrotechnician				
						Ensure all control circuits are clearly marked and cannot be accidentally mixed up with other circuits. Use incompatible connectors if possible or ensure that all connections are labelled and secured.	Pyrotechnician				
						Perform a check of rigging, wiring and firing systems before loading effects.	Pyrotechnician				
						Monitor access to areas with rigging and wiring to identify any suspicious behaviour.	Event Technician & Pyrotechnician				

Vapours from effects	Respiratory distress	A B C X	3	3	**9**	Consult manufacturer information sheets to identify effects which pose a smoke/vapour hazard.	Pyrotechnician	1	3	**3**	Fire alarm isolation is necessary when using effects as they may produce smoke from their electric igniter or from the effect itself. However, when isolated, the capacity to detect fires is lessened, precisely when it may be most needed. This requires extra vigilance from all company members.
						Extensively rehearse scenes with effects, with blocking adjusted if necessary to distance people from effects.	Event Technician & Pyrotechnician				
						Ensure adequate ventilation onstage is using effects that give off harmful smoke/vapours.	Technical Director				
						Ensure fire alarm isolation is enabled during and immediately after firing.	Pyrotechnician				

Risk Assessment Guidance

Control Measure Hierarchy		
Eliminate	Remove the hazard wherever possible which negates the need for further controls.	If not possible then explain why.
Substitute	Replace the hazard with one less hazardous.	If not possible then explain why.
Physical Controls	Examples: enclosure, fume cupboard, glove box.	Likely to still require admin controls as well.
Admin Controls	Examples: training, supervision, signage.	
Personal Protection	Examples: respirators, safety specs, gloves.	Last resort as it only protects the individual.



Risk Assessment Matrix

LIKELIHOOD						
	5	5	10	15	20	25
	4	4	8	12	16	20
	3	3	6	9	12	15
	2	2	4	6	8	10
	1	1	2	3	4	5
		1	2	3	4	5
		IMPACT				

Likelihood		
1	**Rare**	eg. 1 in 100,000 chance or higher
2	**Unlikely**	eg. 1 in 10,000 chance or higher
3	**Possible**	eg. 1 in 1,000 chance or higher
4	**Likely**	eg. 1 in 100 chance or higher
5	**Very Likely**	eg. 1 in 10 chance or higher

Impact		
1	**Trivial- insignificant**	Very minor injuries eg. slight bruising.
2	**Minor**	Injuries or illness eg. Small cut or abrasion which require basic first aid treatment even if self-administered.
3	**Moderate**	Injuries or illness eg. Strain or sprain requiring first aid or medical support.
4	**Major**	Injuries or illness eg. Broken bone requiring medical support > 24 hours and time off work >4 weeks.
5	**Severe - extremely significant**	Fatality or multiple serious injuries or illness requiring hospital admission or significant time off work.

Risk Groups		
A	**Audience**	People that enter performance locations as patrons.
B	**Band**	Members of the show company that are primarily located in the band "pit".
C	**Cast**	All other members of a show company, including production team.
G	**General Public**	Any member of the public not attending a show.
X	**Crew**	Any person that is involved with technical aspects of a show.