

**012 Safe Use of Pyrotechnics Safe System of Work**

<b>Activity:</b>	Using Pyrotechnics
<b>Hazards:</b>	Accidental Misfiring Fire
<b>People At Risk:</b>	Performers, Backstage Crew, Employees, Members of the public
<b>Possible Outcome:</b>	Serious injury or Death

**Assessment**

012 - Pyrotechnics Risk Assessment

**Equipment**

A lockable metal box - stored in the theatre’s lighting box and this should be locked and not left unattended at any time.

The key to the metal box must be kept with a second designated person and not the designated person responsible for the storage of the pyrotechnics to avoid miss use.

**Prior To Start**

**A Full Risk Assessment must be carried out by the designated person responsible for the storage and another designated person for the handling of the Pyrotechnics and given to the theatre for review 30 Days BEFORE the event.**

**A list of the Pyrotechnics being used, amount and when they are to be used including the Product Safety Sheet for each must be provided to the theatre 30 Days BEFORE the event.**

### Method

Can only store less than 5kg NEQ (Net explosive quantities) of 1.4S or 1.4G at any time.

No pyrotechnics may be bought into the building that has a HT (Hazard type) rating of more than HT4.

All pyrotechnics must have a maximum height of 3.6m or 12' and not exceed this. Anything over this must not be used.

Any pyrotechnics used must only have a firing angle of vertical.

All pyrotechnics used in the theatre may only be used on the stage in the auditorium.

All explosives must be kept in the transport packaging they are supplied in.

Must be stored in a locked and secure metal box.

All firing systems must always be of a recognised design and manufacture, incorporating both electrical and mechanical fail-safes (i.e. key switch and panel switch enable systems).

Pyrotechnics must be checked and cleaned before every performance.

No naked flames or sparking equipment must be near the equipment at any time.

No person under 18 years of age may handle the Pyrotechnics.

The designated person should carry the ignition key at all times and should only insert the key immediately prior to ignition.

At no time should the key be left in the firing device.

Any spillage must be cleared by the designated handler only.

Must wear PPE and sweep any loose powder and submerge in a large bucket of water outside in a secure location for a minimum of 48 hours.

Cables running to the pods on stage must be taped down and made secure.

All performers and crew must be made aware of where these are to prevent accidents.

Pyrotechnics must be clearly marked on the stage and have a “Zone” to prevent accident or danger.

Pyrotechnics must be placed at least 2.5 meters from the audience, side of stage, any set and Tabs, referred to as the “Zone”.

The loading of the Pyrotechnics MUST only be done by the designated person handling the Pyrotechnics.

Once the pods have been loaded the operator MUST stay within the vicinity to ensure the safety of everyone is maintained.

No person under 18 years of age may load the Pyrotechnics.

When loading the pyrotechnic devices it is important that the operator has isolated the control cable from the firing box.

Always use the manufacturer’s holders.

Ensure that all electrical circuits are isolated before connecting pyrotechnic devices to the firing system.

The firing of the pyrotechnics must be observed at all times by the designated handler from a safe distance and have a clear and uninterrupted view of the position in which the device is located.

If any member of the cast, crew or any person is within the “Zone” at the time of fire, under NO CIRCUMSTANCE must the pyro be set off.

Scenic materials must be kept clear at the time of firing.

If ANY set, prop or cloth/curtain is within “Zone” at the time of firing the pyro must NOT be set off.

The designated person should carry the ignition key at all times and should only insert the key immediately prior to ignition.

At no time should the key be left in the firing device.

Inhalation of smoke produced from the effect should be avoided. Any person found suffering from smoke inhalation must be removed to fresh air and medical assistance sought.

Pyrotechnics that fail to fire should immediately be isolated from their firing mechanism and returned to its original packaging to await disposal.

Later made safe by soaking in water. The wet powders can then be disposed of by flushing down a toilet.

After the Pyro has been used it must be observed to make sure that it is safe and not creating a danger.

**End Of Shift**

After the auditorium has been cleared all pyro's must be cleared and dealt with in a safe manner.

All devices must be disposed off away from the premises and not onsite.

**Control Measures**

<p><b>People</b> Theatre Technician</p>	<p><b>Environment</b> Diagram of Safety Zones</p>	<p><b>Equipment</b> Appropriate Fire Extinguisher</p>
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**Responsible Persons**

Theatre Technician  
Manager – Sally Heath  
Weston-super-Mare Town Council – Employer  
Ellis Whittam – H&S Consultants

### Review

If any change in legislation or any incident

### References

012 Pyrotechnic Risk Assessment

**Ref No:**

**012**

**Date:**

28/6/21

**Author:**

**Rob Heath**

**Position:**

Theatre Technician



<b>Location/Dept.:</b> Blakehay Theatre			<b>Date Assessed:</b> 28/6/21		<b>Assessed by:</b> Rob Heath		
<b>Task/ Activity:</b> Use of Pyrotechnics			<b>Review Date:</b> June 22		<b>Reference Number:</b> 012		
Activity/ Task	Hazard/Risk	Persons at risk	Controls in place	Severity (1-5)	Likelihood (1-5)	Risk/ Priority	Additional controls required
Storage of Pyrotechnics	Accidents	Performers, Backstage Crew, Employees, Members of the public	<p>Can only store less than 5kg NEQ (Net explosive quantities) of 1.4S or 1.4G at any time.</p> <p>No pyrotechnics may be bought into the building that has a HT (Hazard type) rating of more than HT4.</p> <p>All pyrotechnics must have a maximum height of 3.6m or 12' and not exceed this. Anything over this must not be used.</p> <p>Any pyrotechnics used must only have a firing angle of vertical.</p> <p>All pyrotechnics used in the theatre may only be used on the stage in the auditorium.</p> <p>All explosives must be kept in the transport packaging they are supplied in.</p> <p>Must be stored in a locked and secure metal box.</p>	5	2	10	The use of pyrotechnics will be reviewed for each show by the Theatre Technician as they are trained.

			<p>All firing systems must always be of a recognised design and manufacture, incorporating both electrical and mechanical fail-safes (i.e. key switch and panel switch enable systems).</p> <p>Pyrotechnics must be checked and cleaned before every performance.</p> <p>No naked flames or sparking equipment must be near the equipment at any time.</p> <p>A Full Risk Assessment must be carried out by the designated person responsible for the storage and another designated person for the handling of the Pyrotechnics and given to the theatre for review 30 Days BEFORE the event.</p> <p>A list of the Pyrotechnics being used, amount and when they are to be used including the Product Safety Sheet for each must be provided to the theatre 30 Days BEFORE the event.</p> <p>The metal box must be stored in the theatre's lighting box and this</p>			
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			<p>should be locked and not left unattended at any time.</p> <p>The key to the metal box must be kept with a second designated person and not the designated person responsible for the storage of the pyrotechnics to avoid miss use.</p> <p>A First Aider must be on site when using pyrotechnics.</p>				
<b>Handling of Pyrotechnics</b>	<b>Accidents</b>	Performers, Backstage Crew, Employees, Members of the public	<p>No person under 18 years of age may handle the Pyrotechnics.</p> <p>The designated person should carry the ignition key at all times and should only insert the key immediately prior to ignition.</p> <p>At no time should the key be left in the firing device.</p> <p>There should be one designated person who is responsible for the handling of the explosives. (This must be different to the designated person responsible for the storage of the Pyrotechnics). This person should not be the key holder for the storage box to save miss use.</p>	5	2	10	The use of pyrotechnics will be reviewed for each show by the Theatre Technician as they are trained.

			<p>A test firing and a safety rehearsal <b>MUST</b> take place before pyrotechnics are used in any production or event.</p> <p>An appropriate fire extinguisher must be kept with the designated handler for any emergency or event.</p>				
<b>Spillage of Pyrotechnics</b>	Accidents	Performers, Backstage Crew, Employees, Members of the public	<p>Any spillage must be cleared by the designated handler only.</p> <p>Must wear PPE and sweep any loose powder and submerge in a large bucket of water outside in a secure location for a minimum of 48 hours.</p> <p>Gloves and a dust mask must be worn.</p> <p>Theatre Courtyard to be used for disposal and temporary signs must be put in place.</p>	5	2	10	The use of pyrotechnics will be reviewed for each show by the Theatre Technician as they are trained.
<b>Placement of the Pyrotechnics on stage</b>	Accidents	Performers, Backstage Crew, Employees, Members of the public.	<p>Cables running to the pods on stage must be taped down and made secure.</p> <p>All performers and crew must be made aware of where these are to prevent accidents.</p>	5	2	10	The use of pyrotechnics will be reviewed for each show by the Theatre Technician as they are trained.

			<p>Pyrotechnics must be clearly marked on the stage and have a “Zone” to prevent accident or danger.</p> <p>Pyrotechnics must be placed at least 2.5 meters from the audience, side of stage, any set and Tabs, referred to as the “Zone”.</p> <p>A test firing and a safety rehearsal MUST take place before pyrotechnics are used in any production or event. An appropriate fire extinguisher must be kept with the designated handler for any emergency or event.</p> <p>Temporary warning signs must be set out at all routes which might lead into a danger zone where pyrotechnics are about to be used.</p>				
<b>Loading of the Pyrotechnics</b>	Accidents	Performers, Backstage Crew, Employees, Members of the public	<p>The loading of the Pyrotechnics MUST only be done by the designated person handling the Pyrotechnics.</p> <p>Once the pods have been loaded the operator MUST stay within</p>	5	2	10	The use of pyrotechnics will be reviewed for each show by the Theatre Technician as they are trained.

			<p>the vicinity to ensure the safety of everyone is maintained.</p> <p>No person under 18 years of age may load the Pyrotechnics. When loading the pyrotechnic devices it is important that the operator has isolated the control cable from the firing box.</p> <p>Always use the manufacturer's holders.</p> <p>Ensure that all electrical circuits are isolated before connecting pyrotechnic devices to the firing system.</p> <p>A test firing and a safety rehearsal <b>MUST</b> take place before pyrotechnics are used in any production or event.</p> <p>An appropriate fire extinguisher must be kept with the designated handler for any emergency or event.</p> <p>Temporary warning signs must be set out at all routes which might lead into a danger zone where pyrotechnics are about to be used.</p>			
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<p><b>Firing of the Pyrotechnics</b></p>	<p>Accidents</p>	<p>Performers, Backstage Crew, Employees, Members of the public</p>	<p>The firing of the pyrotechnics must be observed at all times by the designated handler from a safe distance and have a clear and uninterrupted view of the position in which the device is located. If any member of the cast, crew or any person is within the “Zone” at the time of fire, under NO CIRCUMSTANCE must the pyro be set off.</p> <p>Scenic materials must be kept clear at the time of firing. If ANY set, prop or cloth/curtain is within “Zone” at the time of firing the pyro must NOT be set off. The designated person should carry the ignition key at all times and should only insert the key immediately prior to ignition.</p> <p>At no time should the key be left in the firing device. Inhalation of smoke produced from the effect should be avoided. Any person found suffering from smoke inhalation must be removed to fresh air and medical assistance sought.</p>	<p>5</p>	<p>2</p>	<p>10</p>	<p>The use of pyrotechnics will be reviewed for each show by the Theatre Technician as they are trained.</p>
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			<p>An appropriate fire extinguisher must be kept with the designated handler for any emergency or event - Do not hesitate to walk on stage and immediately put out a fire in an efficient and calm manner.</p> <p>Ensure that the Fire Alarm Zones have been isolated in Zones 3,4 &amp; 5 to prevent the alarms sounding because of smoke. If the operator is in any doubts about safety at the moment the cue should be carried out, they must not, under any circumstances, fire the pyrotechnic device. The final decision must rest with the operator.</p> <p>Temporary warning signs must be set out at all routes which might lead into a danger zone where pyrotechnics are about to be used.</p> <p>A First Aider must be on site when using pyrotechnics.</p>			
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<p><b>Misfiring of the Pyrotechnic</b></p>	<p>Accidents</p>	<p>Performers, Backstage Crew, Employees, Members of the public</p>	<p>Pyrotechnics that fail to fire should immediately be isolated from their firing mechanism and returned to its original packaging to await disposal.</p> <p>Later made safe by soaking in water. The wet powders can then be disposed of by flushing down a toilet.</p>	<p>5</p>	<p>2</p>	<p>10</p>	<p>The use of pyrotechnics will be reviewed for each show by the Theatre Technician as they are trained.</p>
<p><b>After the Pyrotechnic has gone off</b></p>	<p>Accidents</p>	<p>Performers, Backstage Crew, Employees, Members of the public</p>	<p>After the Pyro has been used it must be observed to make sure that it is safe and not creating a danger.</p> <p>An appropriate fire extinguisher must be kept with the designated handler for any emergency or event.</p>	<p>5</p>	<p>2</p>	<p>10</p>	<p>The use of pyrotechnics will be reviewed for each show by the Theatre Technician as they are trained.</p>
<p><b>Disposal of the Pyrotechnics</b></p>	<p>Accidents</p>	<p>Performers, Backstage Crew, Employees, Members of the public</p>	<p>After the auditorium has been cleared all pyro's must be cleared and dealt with in a safe manner. All devices must be disposed off away from the premises and not onsite.</p> <p>An appropriate fire extinguisher must be kept with the designated handler for any emergency or event</p>	<p>5</p>	<p>2</p>	<p>10</p>	<p>The use of pyrotechnics will be reviewed for each show by the Theatre Technician as they are trained.</p>

**Risk/Priority Indicator Key**

Severity (Consequence)
1. Negligible (delay only)
2. Slight (minor injury / damage / interruption)
3. Moderate (lost time injury, illness, damage, lost business)
4. High (major injury / damage, lost time business interruption, disablement)
5. Very High (fatality / business closure)

Likelihood
1. Improbable / very unlikely
2. Unlikely
3. Even chance / may happen
4. Likely
5. Almost certain / imminent

RISK / PRIORITY INDICATOR 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
		SEVERITY (CONSEQUENCE)				

Summary		Suggested Timeframe
12-25	High	As soon as possible
6-11	Medium	Within next 3-6 months
1-5	Low	Whenever viable to do so



### Risk Assessment Agreement

All employees undertaking this task must read this assessment and sign below to state they have understood its contents and agree to work to the control measures.

Name:		Signature:		Date:	
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### Risk Assessment Review

**Review:**

A review of this risk assessment is due for completion within 12 months of the last review or when a situation, equipment or employee changes. The review must be recorded below and if necessary a new assessment should be completed.

To be completed by person conducting review:

<b>Name:</b>	Rob Heath	<b>Signature:</b>		<b>Date:</b>	28/6/21
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Any comments regarding risk assessment:

Is this risk assessment still relevant?	<b>YES</b>	<b>NO</b>
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*If no a new risk assessment should be completed and attached to the front of this assessment.*