

PYROTECHNICS EDUCATION

CAMPAIGN TOOLKIT

INFORMATION SOURCED FROM:

PYROTECHNICS IN STADIA REPORT

COMMISSIONED BY UEFA AND FOOTBALL SUPPORTERS EUROPE (FSE)

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01

INTRODUCTION

This toolkit aims to help safety officers, their safety teams, staff, players, officials, spectators and others to be aware of the dangers and responsibilities around pyrotechnics. The contents have been developed by a working group made up of representatives from the EFL, FA, Football Supporters Association, Premier League, Sports Grounds Safety Authority and UK Football Policing Unit.

The contents of this document compliments and reaffirms advice from the *'Pyrotechnics in Stadia'* report published by UEFA in 2016.

This toolkit provides advice on how to manage those pyrotechnic incidents that continue to occur and ways to engage with your ground's supporters to discourage and work towards eliminating the illegal use of pyrotechnics. It includes key information, messaging and supporting communication materials which can be used by clubs to help educate staff, players, officials, spectators and others on the dangers of pyrotechnics.

This document has also been designed so that the person responsible for handing out the information has the ability to distribute specific chapters to the target audience the advice in each section is aimed for (stewards, players/officials). Including using the **'three-stage approach'** sections as one page flyers.

02

BACKGROUND

Pyrotechnics present dangers to spectators, staff, players, officials and others.

There have been a number of well publicised instances of pyrotechnics (flares, smoke bombs or fireworks) being used within the spectator areas of a stadium and other crowded spaces. In many instances injuries or damage have occurred.

The illegal use of pyrotechnics at football grounds puts the safety of everyone at risk. Staff and players have the right to work without the risk of injury from the crowd, and fans have the right to enjoy football in safe environments.

What are pyrotechnics?

Pyrotechnics are devices containing explosive substances or a mixture of explosive substances designed to produce heat (up to 2500°C), light, sound, gas or smoke or a combination of such effects through self-sustained exothermic chemical reactions. Pyrotechnics will generally burn “to completion”. Water or other methods will not extinguish them.

Types of pyrotechnics and fireworks used in stadia

1. Hand held flares

This device, commonly referred to as “Bengal lights”, produces a bright light (often orange coloured) at the mouth of the tube along with considerable amounts of smoke.

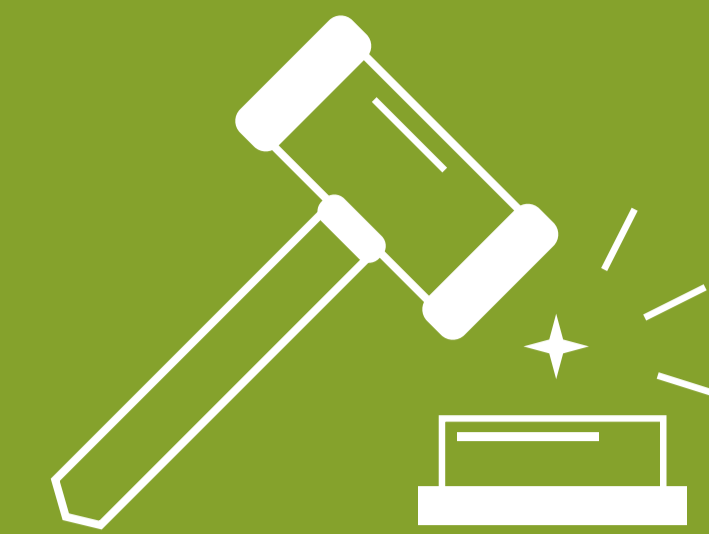
These devices may be designed for distress use or may be small hand-held devices manufactured and explicitly, but illegally, marketed for use in stadia (in a multitude of colours).

2. Distress flares

This device ejects a star (sometimes with a parachute to slow its descent) which burns for an extended duration.

The significant additional issue with such distress devices is the burn duration – this is often greatly extended (as they were designed to burn for a long time to attract attention as a distress device) and hence will continue to burn once discharged and maybe fall, whilst still burning, within the audience area or on the playing surface, and continue to burn for several seconds.

The law



Section 2A of the Sporting Events (Control of Alcohol etc.) Act 1985 states it is a criminal offence to attempt to bring a pyrotechnic device into a designated football ground or to be in possession of a pyrotechnic device in spectator viewing accommodation at a designated football ground.



3. Smoke devices

This device produces dense smoke as a deliberate effect. They are available in multiple colours and are usually chosen to replicate team colours (red, blue, green and yellow are the most common).

Note all pyrotechnic devices produce some smoke but in most cases this is not the primary effect.



4. Strobes

These devices produce flashes of light (usually white but may also be coloured) of approximately equal intensity, duration and frequency.

They can induce epileptic effects in vulnerable people and are disturbing for even those who are not. Indeed, they are used as distraction devices in police or military raids for this very reason.

5. Bangers

These devices produce a large flash and a bang and usually rupture the case which can cause fragment effects. There is a blast effect, and associated loud bang which can cause deafness and significant distress, together with local blast effects and fragments from the device itself as it bursts. The loud bang can also cause panic if thought of as a bomb attack.

These items are potentially fatal or could cause significant and permanent injuries. If they function in an enclosed space (eg a collection vessel) or against a structure, then disruption of the container or structure could result.

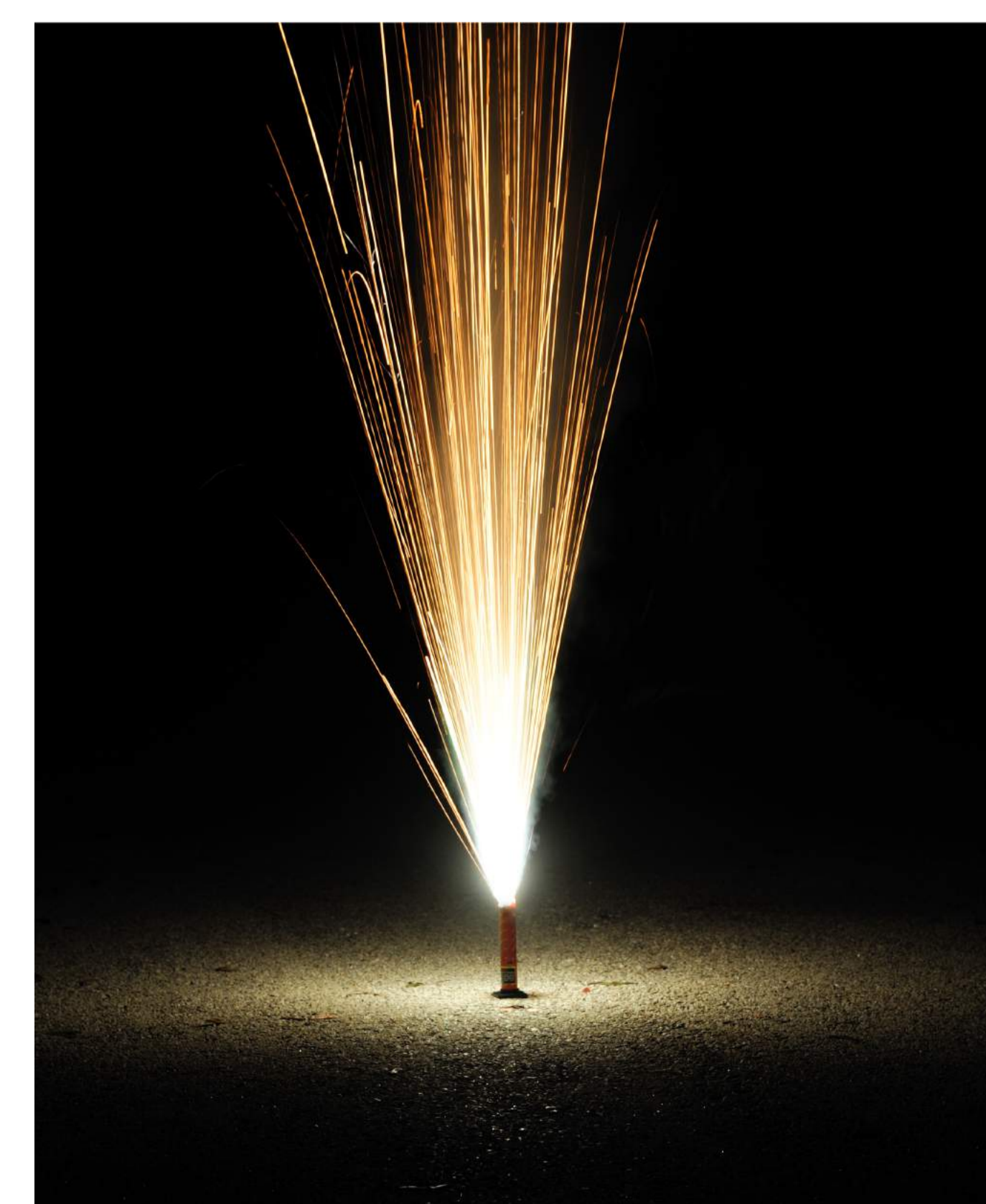


6. Fountains

These devices produce a shower of sparks and may burn up to 1200°C from <1sec ("Jets") to 45 seconds or more.

The incandescent sparks are directional, but could cause significant injury if directed at a person. In addition, once ignited the device will continue to burn for its designed duration.

Fountains have been adapted for use in ordnance disposal and also as ignition devices (eg for remote ignition of bonfires) and this provides a potential alternative route of supply where fireworks themselves are prohibited.



7. Sparklers

A pyrotechnic coated wire which is designed to burn from the tip in a controlled manner emitting sparks.

Sparklers are widely available, but are one of the firework types that is responsible for the most injuries in “normal” use. Primarily this is because the wire running through the item remains extremely hot (1200°C +) for a while once the sparkler is extinguished. As such any contact with flesh can cause deep burns which will be contaminated with combustion by products.



8. Rockets

These devices are designed to fly through the air and (optionally) burst at the apex of their flight to produce a spread of stars.

Most rockets are equipped with sticks to stabilise their flight. Once the rocket has completed its effect (which may involve bursting of the firework head to give a spread of stars) the stick will fall to ground – often at high speed. Injury can therefore result from the structural components of the rocket.

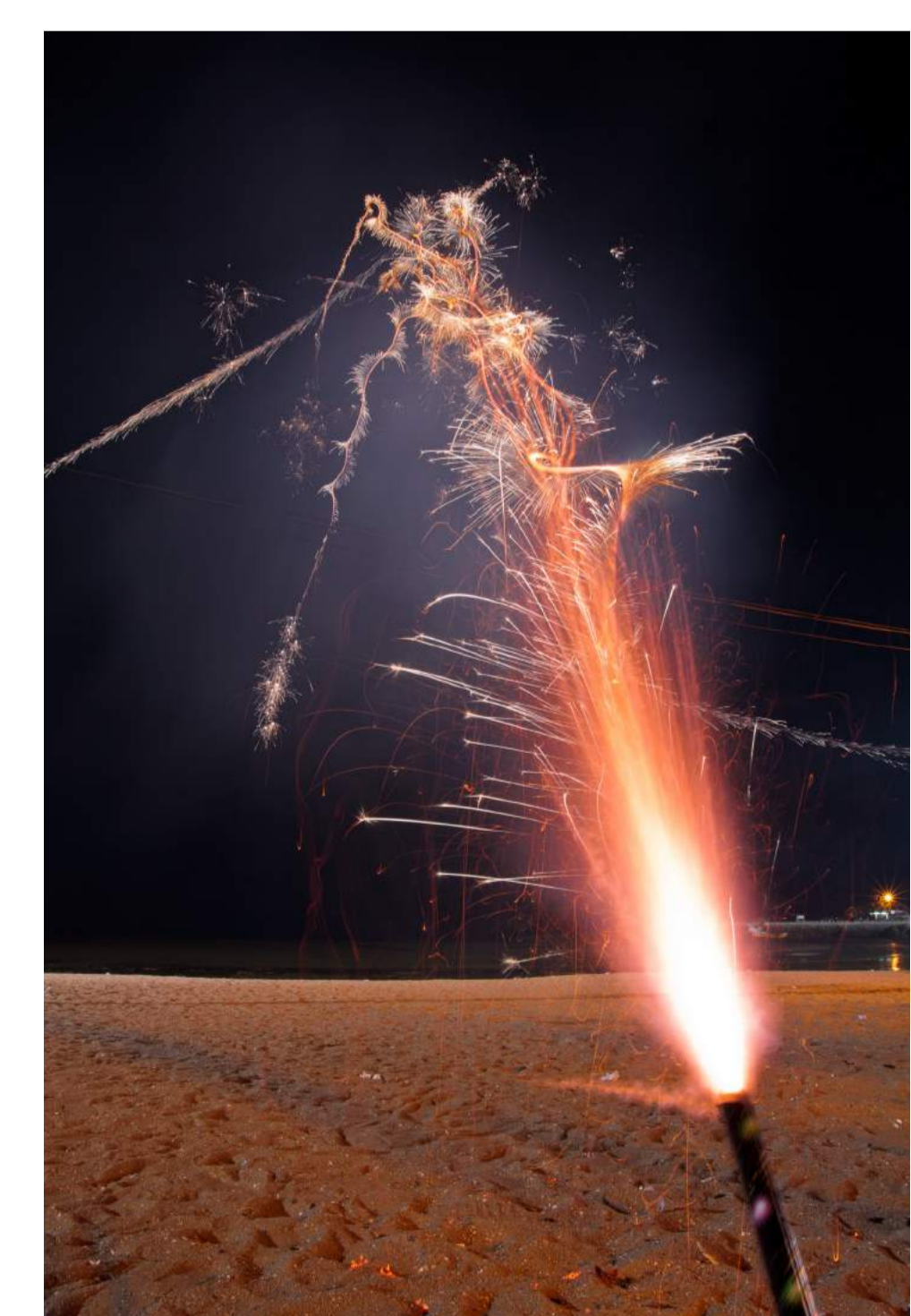
Rockets (and Roman Candles below) have been used as weapons to fire from one side of the stadium to the opposing crowd on the other side, as well as being fired directly at players and officials on the pitch.



9. Roman Candles

These devices produce stars, mini star bursts or reports over an extended period from a single tube. They can last 20-45 seconds and once lit will not go out.

As with other devices, once lit the Roman Candle will normally burn to completion and cannot be extinguished. If oriented towards a person this could cause both a projectile injury and burn injuries.



10. Single shot devices

These single tubed devices produce stars, mini star burst or a report in the same way as does a Roman Candle. The effects are exactly the same but only a single “shot” is fired.

However, the effect is normally projectile and may contain multiple stars, projected bombettes, or bangers.

11. “Cakes”

These devices, which comprise several single shot tubes, linked together and fired sequentially produce stars, mini star bursts or reports over an extended period.

It would be difficult to “smuggle” such devices into a stadium (whereas all the other items are relatively small and could be hidden more easily from inspection). However, it is also possible that people will attempt to break down these multishot cakes to extract single individual tubes if routes of supply of individual items is restricted. This presents a whole new set of dangers, particularly to those in close proximity to where the item is fired.



12. Mines

These devices eject a single conical display of stars or other units in a single “shot”. They are extensively used for punctuation of pyromusical events as the effect is immediate on electric ignition.

13. Whistles

Whistles produce a high intensity screeching or whistling sound over several seconds. They are known to be used as distraction devices by the police or military.

03

HEALTH RISKS AND DANGERS OF PYROTECHNICS

It is illegal to bring a pyrotechnic device into a football ground or to be in possession of a pyrotechnic device in spectator viewing accommodation.

Pyrotechnics are all explosive devices sharing some common features which impact on the potential harm they may pose, not least in terms of mishandling or malfunction. For example, they:

- Consist of pyrotechnic compositions which include their own oxidants and will generally burn “to completion”. Water or other methods will not extinguish them.
- Burn at high temperatures of up to 2500°C.
- Produce toxic combustion byproducts including oxides of sulphur (SO₂), nitrogen (NO_x) and solid oxides of metals as well as more complex products.

Manufacturers of pyrotechnics do not consider it safe for pyrotechnics to be used in areas occupied by spectators.

Flares are made to be used for marine distress and are designed not to be extinguished easily or quickly. They contain strongly oxidising chemicals and burn at temperatures of 2500°C, hotter than the melting point of steel. Smoke bombs are currently the most common type of pyrotechnic used illegally in football grounds in England and Wales. They burn at high temperatures and are designed to be used in wide open spaces. Smoke devices may be very dangerous for those with asthma or breathing difficulties and can cause panic in a tightly packed crowd.

Recent incidents of pyrotechnic devices being used in UK football grounds.

“AFC Telford United have condemned a section of their fans and revealed a nine-year-old boy was left needing hospital treatment after several flares were set off during a non-league game.” - [Mirror](#)

Sunday 2 January 2022, Chester vs AFC Telford United

“A seven-year-old Hull City fan was injured after being struck in the face by a flare that was thrown into the crowd during a Championship match at Barnsley.” - [Sky Sports](#)

Saturday 6 November 2021, Barnsley vs Hull City

“Hashtag United player 'could have been blinded' after firework explodes on pitch. Footballer Matas Skrna narrowly avoided serious injury after the firework landed near him on the turf, with the sparks from the explosion striking his legs.” - [Sky News](#)

Friday 5 November 2021, Hashtag United vs Concord Rangers

“Woman and child injured by pyrotechnics at football game. Police Scotland officers are appealing for information after a number of pyrotechnics, including smoke bombs, bangers and flares, were set off in the away section of the stadium during the Betfred League Cup Quarter Final.” - [Daily Record](#)

Wednesday 25 September 2019, Livingston vs Rangers

The use of pyrotechnics in stadia has various serious health and safety risks, including:

Burns to flesh	Pyrotechnics are a fire hazard, they can burn at up to 2500°C and can easily cause significant burns either from direct contact with the pyrotechnic flame or in close proximity.
Burns to structures and other hazards	The high temperatures mean that ignition of structures or other hazards (eg the pitch, seating, waste bins etc) is possible. This can cause a localised or extensive fire.
Explosive effects on persons	Due to their explosive power, damage to the body such as limb or digit removal can arise from close proximity to an explosion from, for instance, a maroon or rocket head. Ear/hearing damage is also very likely to those within a few metres of such a device exploding.
Explosive effects on structures	Explosive effects could compromise the structural integrity of even substantial structures. Especially where many items are simultaneous ignited, or when the devices have been modified or contained.
Smoke	Lung damage, eye damage and carcinogenic effects, caused by repeated or high concentration of toxic smoke. It can also exacerbate existing respiratory conditions. Coloured smoke can stain persons, clothing or structures.
Impact on vision	Impact damage to eyes, or chemical contamination can cause temporary or even long-term loss of sight, particularly if there is physical damage or burning.
Impact on hearing	Loss of hearing can result from close proximity of explosive effects, such as those from bangers or the head of a rocket exploding. These items are generally intended to be used at least 25 metres from persons (if they are categorised as fireworks).
Panic	The effect of panic on an audience as a result of actual or perceived injury or structural damage can be a significant factor. Emergency evacuation procedures should be considered where panic is caused by a pyrotechnic device functioning in a crowd of people – effects could be significantly different to other causes of panic especially in a heightened awareness to terrorist activities.

All pyrotechnic devices have a “safety” distance for good reason, which will exceed the available space within a crowded stand or stadium.



There are significant health and safety risks arising from the use of pyrotechnics in close proximity to other people and in contravention of the safety distances which are specified on the pyrotechnic articles themselves.

There is no safe use of pyrotechnics in spectator areas at football events within stadia or in crowded places.

Many incidents involving the use of pyrotechnics in stadia are not well documented or supported by images or video. Often those who are injured are the ones using the pyrotechnics, or they know that such use is illegal.

The following images are used to illustrate the types of effects and likely problems. Not all relate directly to use in stadia but are illustrative of the types of effects and potential for harm that could be found within stadia.



Smoke device on pitch as teammates celebrate goal



Flares on the pitch after team score first goal



Fireworks explode in crowds as football fans celebrate

04

MANAGING THE ILLEGAL USE OF PYROTECHNICS

There is no safe use of pyrotechnics in spectator areas at football events within stadia or in crowded places.

Safety and security personnel, players or others who might attempt to deal with pyrotechnic devices on the field should follow the **'three-stage approach'** provided in this document to ensure that they are not inadvertently increasing the hazard to themselves or others.

It is now advised to let a pyrotechnic burn out and then use a bucket of water to take away the spent cartridge. This change of advice from the use of sand is due to the heat emitted, particularly from a flare, which can reach a temperature of 2500°C, higher than the melting point of sand. As these devices are self-sustaining (i.e. they have an oxidant in the compound so don't need to draw on atmospheric oxygen), you could end up with a molten mess on the pitch.

If illegal use of a pyrotechnic does take place, follow this three-stage approach:

01

MOVE AWAY

- Get at least 5 metres away.
- Be seen to get away. Players, match officials, stewards, and emergency services should show that they recognise the dangers.
- Pause the fixture if, for example, the device is on the pitch and/or there's a lot of smoke. Officials and safety officers should assess the seriousness of the situation and decide whether to pause the fixture whilst the incident is being dealt with.

02

LEAVE THEM ALONE

- **Pyrotechnics are self-sustaining and cannot be extinguished.** Any attempts to extinguish a pyrotechnic puts a person close to it with associated health and safety risks.
- You don't know what the pyrotechnic will do next – it may explode.

03

LET THEM BURN OUT

- Stay away, let the pyrotechnic burn to completion, and **then** deal with it.

THEN (and only then)

- Only once the pyrotechnic has burnt to completion should you attempt to remove it.
- Even then the pyrotechnic may still be hot and burning internally.
- Use suitable personal protective equipment to place the spent case into a bucket of water, as it may still be hot and burning internally.
- In case of a fire in a high-risk area, water fire extinguishers are best to fight the fire. Make sure to stand five metres away when directing water onto the surface.

Please keep in mind that all pyrotechnic devices are formed of compositions which include their own oxidants. This means that once ignited they will generally burn "to completion" and cannot be extinguished by conventional means (eg by excluding oxygen). Some pyrotechnic devices will even burn under water – and hence cannot be extinguished by water (or other) fire extinguishers.

05

PREVENTING THE USE OF PYROTECHNICS

Ground management teams should use all reasonable steps to prevent the use of pyrotechnics in stadia, including those listed overleaf.

Throughout these steps, it is crucial to work closely with all agencies involved in the management of events at a stadium, including the local authority, police, fire and ambulance services.

Safety officers, their safety teams, staff, players and officials should receive training on how to follow the **'three-stage approach'** included in this toolkit. It is important to complete training on the safe handling, collection, storage and disposal of pyrotechnics.

Before an event

- Use your website, social media, and tickets, to send a clear message that the possession of pyrotechnics in grounds is prohibited in all circumstances. Be clear that anyone found guilty of such use will be banned from the ground and may also be prosecuted. Further details and messaging is available in the Fan Engagement section of this toolkit.
- Discourage club use of any pyrotechnics and consider light shows as an alternative.
- Gather information on visiting supporters, for example via the Football Safety Officers Association (FSOA)/police intelligence from previous fixtures or information from the visiting club's safety team.
- Use intelligence from sources including social media and others, to build a risk assessment on the potential nature and scale of risk of the use of pyrotechnics at an event. Use this as part of the stewards' safety briefing, but don't let this override the '**three-stage approach**' included in this toolkit.

During an event

- Use signage around the ground to reinforce the message that the possession and use of pyrotechnics is illegal and prohibited.
- Use searching, including dogs as a deterrent, to check for pyrotechnics when spectators enter the stadium.
- Use CCTV with retrospective dynamic interrogation (the ability to focus the image on an individual supporter or group of supporters) to identify those using pyrotechnics in the crowd.

After an event

- Gather evidence, in close liaison with local police representatives.
- Where there is robust evidence of an individual(s) using pyrotechnics in the stadium, take steps to ban them from the ground and a wider exclusion from other football grounds.
- Publicise such ground banning orders and/or arrests.

06

ADVICE TO STEWARDS

Stewards play an extremely important part in the prevention of the illegal use of pyrotechnics at sports grounds. In many instances it should be remembered that stewards may be the only service personnel representing the management with whom spectators have any contact during the course of an event. As such, the individual efforts and attitudes of stewards can have a strong bearing on achieving safe conditions.

To reduce the likelihood and incidence of a pyrotechnic device entering or being used inside a football stadium, the following steps should be taken:

- Gather intelligence and information when attending staff briefing sessions at every event. The stewards safety briefing is best practice to remind stewards of the dangers and the grounds process.
- Search fans upon arrival and inside stadium if you sense suspicious behaviour.
- If a device is found, safe storage of the device is important. Suitable storage should be available, such as an amnesty bin or appropriate lockable storage container in a separate room. If you have to use one, make sure the amnesty bin or appropriate lockable storage container itself doesn't become a greater hazard. Counter terrorism policy of regular bin emptying must be followed.
- Gather evidence, in close liaison with safety officers and local police representatives.
- Where there is robust evidence of an individual(s) using pyrotechnics in the stadium, safety teams and local police representatives should take steps to ban them from the ground, seek wider exclusion from other football grounds and prosecute them under the Sporting Events (Control of Alcohol etc.) Act 1985.

If illegal use of a pyrotechnic does take place, stewards should follow this three-stage approach:

01

MOVE AWAY

- Get at least 5 metres away.
- Be seen to get away. Players, match officials, stewards, and emergency services should show that they recognise the dangers.
- Pause the fixture if, for example, the device is on the pitch and/or there's a lot of smoke. Officials and safety officers should assess the seriousness of the situation and decide whether to pause the fixture whilst the incident is being dealt with.

02

LEAVE THEM ALONE

- **Pyrotechnics are self-sustaining and cannot be extinguished.** Any attempts to extinguish a pyrotechnic puts a person close to it with associated health and safety risks.
- You don't know what the pyrotechnic will do next – it may explode.

03

LET THEM BURN OUT

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THEN (and only then)

- Only once the pyrotechnic has burnt to completion should you attempt to remove it.
- Even then the pyrotechnic may still be hot and burning internally.
- Use suitable personal protective equipment to place the spent case into a bucket of water, as it may still be hot and burning internally.
- In case of a fire in a high-risk area, water fire extinguishers are best to fight the fire. Make sure to stand five metres away when directing water onto the surface.

Please keep in mind that all pyrotechnic devices are formed of compositions which include their own oxidants. This means that once ignited they will generally burn "to completion" and cannot be extinguished by conventional means (eg by excluding oxygen). Some pyrotechnic devices will even burn under water – and hence cannot be extinguished by water (or other) fire extinguishers.

07

ADVICE TO PLAYERS AND OFFICIALS

The use of pyrotechnics in stadia is a serious danger to players and match day officials. To prevent risk of injury, the '**three-stage approach**' overleaf should be followed.

If illegal use of a pyrotechnic does take place, players and officials should follow this three-stage approach:

01

MOVE AWAY

- Get at least 5 metres away.
- Be seen to get away. Players, match officials, stewards, and emergency services should show that they recognise the dangers.
- Pause the fixture if, for example, the device is on the pitch and/or there's a lot of smoke. Officials and safety officers should assess the seriousness of the situation and decide whether it is best to pause the fixture whilst the incident is being dealt with.

02

LEAVE THEM ALONE

- **Pyrotechnics are self-sustaining and cannot be extinguished.** Any attempts to extinguish a pyrotechnic puts a person close to it with associated health and safety risks.
- **Remember... NEVER pick up a pyrotechnic.** You don't know what the pyrotechnic will do next – it may explode.

03

LET THEM BURN OUT

- Stay away, let the pyrotechnic burn to completion.
- Leave the ground safety team to deal with it once it has finished burning.

Players message to fans

Players can have a big impact on changing the behaviour of their supporters. When appropriate, players should use their platform to influence the fans by publicly discouraging the use of pyrotechnics.

08

FAN ENGAGEMENT AND COMMUNICATIONS PLAN

To discourage the use of pyrotechnics in sports grounds, it is important for clubs to share key messages and digital assets with fans via club website, social media, tickets and public address announcements.

Important information and messaging to focus on:

- Publicise club bans for illegal use of pyrotechnics, and pyrotechnic-related arrests and football banning orders.
- Highlight the dangers and health and safety risks.
- Share fan stories on the negative impact of pyrotechnic incidents.
- Share club-best practice and code of conduct.
- Adopt the use of light shows as an alternative to pyrotechnics.
- Highlight that the use of pyrotechnics in spectator areas of stadiums is viewed as a 'nuisance' to fans and players. They should not be part of the football culture.

Example messaging to be used by clubs

- The use of pyrotechnics (flares, smoke bombs, bangers, etc.) in football grounds is against the law and can cause serious harm to your fellow fans, players and others.
- Being in possession of a pyrotechnic device is a criminal offence. Are they really worth getting arrested and banned for?
- Fans reveal: "Pyrotechnics don't improve the atmosphere! We want to be able to get behind our team, enjoy the game and see how they're playing without obstruction and risking our health."
- Flares can burn at 2500°C, that's higher than the melting point of iron! The use of pyrotechnics can result in serious injuries.
- Remember why we love the sport. Show passion without pyrotechnics!

Supporting material

- A video from Ken Scott, SGSA's Head of Inspectorate, and Mark Holland, SGSA's lead for pyrotechnics, which provides detailed explanations in support of the content included in this toolkit.

The video is available on demand to be viewed by safety officers, their safety teams, staff, players and officials at every club.

Pyrotechnics Education Knowledge Video
<https://youtu.be/iLHkwy8a0Q8>