

# **Sports Grounds Safety Authority (SGSA) Guidance** **regarding the handling of pyrotechnics (flares, smoke** **bombs and fireworks) in sports grounds**

This guidance has been produced to help clubs and venue managers consider the safety management implications of the apparent increasing use of pyrotechnics (i.e. flares, smoke bombs and fireworks) at sports grounds.

Section 15.10c of the Guide to Safety at Sports Grounds advises that ground management adopts and enforces a clear policy to prevent and prohibit spectators from taking flares or fireworks into a sports ground. Such policies should promote various options, including the use of intelligence and the searching of individuals suspected of being in possession of such articles. However, it is also important that ground management have procedures in place to safely deal with any pyrotechnic devices that may be confiscated and with any that may be discharged within the sports ground. This guidance therefore seeks to provide information to help ground management develop its policies and procedures.

It should also be noted that the Sporting Events Control of Alcohol Act 1985 (1985 Act) (as amended by the Public Order Act 1986) makes it an offence for a person to have in their possession any firework / flare / smoke bomb etc whilst attempting to enter or whilst in any part of a designated football ground which is in sight of the pitch, and provides police with the power to search people and to arrest persons committing offences under the Act.

## **General issues regarding flares/smoke bombs/fireworks**

- If a flare is out of date (beyond its 3 year life span) it can become unstable and react in a different way to that intended thereby causing potential injury to the person discharging it and others around.
- Hand flares and rocket flares generate extreme heat which can readily ignite

- any nearby combustible material causing fires and/or burns to people.
- Extinguishing a flare is extremely difficult as often the flare contains burning metals. Any burns caused by a flare are likely to be severe.
  - Smoke bombs generate what is referred to as “cold smoke” but the chemical reaction which creates the smoke generates sufficient heat to cause burns to people attempting to move them.
  - The discharging of a pyrotechnic within a crowd may well create crowd disturbance and disruption as people try to move quickly away from the immediate area.
  - The smoke from flares and smoke bombs can cause further distress and breathing difficulties, particularly for those with respiratory problems.
  - Dependent on the location, the smoke can set off automatic fire detection systems.
  - “Thunderflash” type fireworks discharged in a confined space may cause temporary or permanent hearing problems as well as minor blast injuries for those in close proximity.

### **The handling of unused pyrotechnic devices**

Pyrotechnics are regarded as explosives and thus their regulation comes under The Manufacture and Storage of Explosives Regulations 2005. Guidance on appropriate storage conditions is available in the Approved Code of Practice to these Regulations (ISBN 0-7176-2816-7), paragraphs 260-323.

Where unused devices have been confiscated at a sports ground, and until they are disposed of, ground management will be responsible for their safe storage. The amount of explosives in individual flares, smoke bombs or fireworks is relatively small and it is highly unlikely that the quantity of confiscated pyrotechnics will exceed the limit for which a licence is required for the storage of such devices. However ground management are advised to contact their Local Authority to establish their requirements for the registration of storage facilities for explosives and have written protocols with their local police as to how seized pyrotechnic devices can be secured

as evidence (if appropriate) and safely disposed of.

### **Seizure of pyrotechnics**

Whilst some flares and other pyrotechnic devices are quite bulky and may be easily identified, others are quite small enabling an individual to secrete them on their person in a way that may make them difficult to find as part of a normal searching regime. Ground management should do everything possible to prevent such articles from being taken into their ground and also educate spectators as to the inherent dangers. Where intelligence suggests that pyrotechnic devices are likely to be brought into a ground, consideration could be given to deploying search dogs that are specially trained to detect some of the chemicals in such devices. The deployment of such dogs may also have a significant deterrent effect.

Ground management is advised to include instruction on the handling of pyrotechnic devices as part of their ground contingency plans. Plans should include consideration of safe areas for storage and arrangements for their eventual disposal. The action to be taken when a pyrotechnic device has been seized from an individual should be covered in steward training and be included in the stewards' safety handbook.

### **Handling pyrotechnics that have been discharged**

As previously highlighted there are a number of different types of pyrotechnic devices available and each can present their own problems when discharged amongst a crowd of people. Ground management need to ensure their training and contingency plans identify what to do in such circumstances. The main types of pyrotechnics are:

- fireworks: i.e. roman candle type devices;
- smoke bombs: which discharge large amounts of coloured smoke;
- thunderflashes: which cause a bright flash and a loud bang;
- hand-held flares: which emit intense light and heat and therefore present a heat/fire hazard; and

- rocket flares: which are designed to be propelled at speed into the sky (parachute/aerial flares), possibly with a loud bang (Maroons). These present both a projection (being capable of travelling 300m) and fire hazard. These present the highest risk and have been responsible for at least one fatality at a UK sporting venue in recent years.

Flares used are typically of the hand-held type having an integral handle. Once such flares have been set off, they cannot be easily extinguished and will typically burn for between 30 to 60 seconds, following which it will no longer discharge any light or smoke. However, it will still be too hot to handle for quite some time after and may still present an ignition source for any combustible materials around. Provided there is no immediate threat of escalation or injury, it is safer to allow the flare to burn out before any action is taken. If a burning flare is dropped on the floor, clear the area and cover the flare with sand. The flare may continue to burn through the sand and therefore further sand may need to be poured on top to minimize the effect of the flare. Once light ceases, use a welder's glove or similar to remove the remains by the handle and place in a metal bucket of water for at least half an hour.

One effective method we have observed of minimizing the effects of a smoke bomb is to place it in a metal bucket half filled with sand and then pour a further half a bucket of sand on top. Very little smoke will filter through the sand and the device can be moved in the bucket away from spectators and/or players. Once the device has finished emitting smoke it should be placed in a metal bucket of water for at least half an hour. A welder's glove or similar should be used to pick up a smoke bomb that is discharging, or has discharged, smoke.

Any articles that do not have an evident handle should be handled with appropriate gloves or tongs as they will also remain hot for some considerable time (30 minutes plus). When handling spent pyrotechnics the top should always be pointed to the ground and away from people. Those handling them should wear appropriate eye protection.

## **Pyrotechnic devices discharged in concourses**

Flares/smoke bombs/fireworks are designed to be discharged in the open air and there is little advice available as to the possible effects of discharging such devices on a concourse.

There have already been instances of pyrotechnic devices being set off in concourses or toilets. At least one club has carried out its own tests to consider the possible action it would need to take if flares and/or smoke bombs were discharged in a concourse. Some of the observations from those tests included:

- Although the “hot” smoke from a flare and the “cold” smoke from a smoke bomb behaved in different ways both activated the automatic fire detection and alarm system and would continue to do so until the area was vented of smoke.
- Depending on the density of the smoke, the concourse, or part of it, may need to be closed until the smoke is vented.
- The “cold” smoke from a smoke bomb flowed out of a vomitory in one concourse but when the test was repeated in another concourse in a higher tier the smoke flowed away from a vomitory and down an emergency exit staircase.
- Opening exit gates had a limited impact on venting the smoke from the emergency exit staircase.
- Positive Pressure Ventilation Fans, supplied by the fire and rescue service, had a significant impact on venting the smoke from the emergency exit staircase through the vomitory.
- The smoke from a smoke bomb discharged in a toilet was largely cleared by the toilets ventilation system.
- As smoke from a device discharged in a concourse may become visible to supporters in other parts of the ground, a prepared or pre-recorded PA announcement, which reassures supporters, should be available.

As the design and layout of concourses varies, the outcome of the tests described above may not be the same in every concourse. It is therefore recommended that clubs carry out their own tests, in conjunction with their local fire and rescue service, to help inform their contingency plans for dealing with the effects of a pyrotechnic device discharged in their concourses.

The fire strategies for most modern stadiums are designed for smoke containment or smoke dispersal. On an alarm activation, some systems release door hold open devices, close concession units shutters or activate Smoke and Heat Exhaust Ventilation System (SHEVS). It is therefore recommended that when carrying out tests to inform the contingency plans, the fire strategy and systems in place are also considered. In addition to developing contingency plans for dealing with pyrotechnic incidents, this potential hazard should also be added to the fire risk assessment and the agreed control measure documented.

### **Elimination of risk**

Ground management should ensure that it has policies and plans in place to prevent pyrotechnic devices from being brought into the ground. The plans should include gathering of intelligence, detection of devices and searching of spectators.

### **Contingency plans**

Ground management should ensure that it has contingency plans in place for the handling, storage and safe disposal of any pyrotechnic devices seized from supporters and for how they will deal with pyrotechnics discharged by supporters either within the viewing areas or elsewhere in the ground.

In drawing up those contingency plans the following should be considered:

- Communicating with visiting supporters in advance of the event.
- Providing appropriate signage and/or programme notes describing the dangers of setting off pyrotechnic devices.

- Ensuring appropriate procedures are in place, in line with Approved Code of Practice, for the safe storage of any devices seized.
- Ensuring that any staff who will be handling devices that are discharging, or have discharged, receive appropriate training in their safe handling, are provided with appropriate personal protective equipment in the form of suitable clothing, gloves and eye protection together with appropriate equipment for dealing with the devices i.e. metal buckets of sand to suppress the effects of the devices while they are discharging and metal buckets of water in which to place the discharged devices while they cool down.
- Ensuring the medical provision includes appropriate expertise and facilities to deal with burns, which may be extreme, and smoke inhalation.
- Ensuring that where a flare or smoke bomb has been discharged, staff are trained and briefed to make sure that everyone is moved far enough away from the device so that they are not in danger of being exposed to the intense heat, smoke or flame.
- Ensuring that all staff are aware that only trained personnel should handle discharging or discharged devices.
- Any specific action that will need to be taken if a device is discharged in the vicinity of any spectators with known respiratory problems.
- Whether there are any articles which may react to the intense heat and become ignited themselves.
- The effects caused by discharging devices within the confines of a concourse including; how fire safety will be maintained if the fire alarm system is out of action due to the effects of the discharged device; whether the concourse will need to be cleared of spectators until the smoke is vented and how that venting is to be achieved.
- Where the discharge of a pyrotechnic device has been witnessed by ground staff and captured on CCTV, that there are procedures in place to retain any evidence and prove continuity in order to assist any potential prosecution of offenders.