

# Guidance on large organised firework displays

## 1 Introduction

This guidance gives advice on safety for large outdoor firework displays where fireworks are to be fired by a competent display operator as defined in Section 5.

It should be noted that the recommendations in this guidance are strictly appropriate only to large public displays. For information on smaller displays, refer to Guidance on Smaller Displays document FSGN27.

## 2 Responsibility for Displays

Because of the work involved in organising large events, there will be a legal requirement to conform to the appropriate health and safety legislation which imposes duties in respect of the health and safety of everyone involved in arranging and giving the display.

A committee should be responsible for the operation of the display, with one member in direct charge of safety matters, and not engaged in any duties or activities which would prevent exercising general supervision.

The principle duties of the safety officer will be implementing a system for ensuring that the organisers, display operator and any other people working at the display comply with the regulations.

## 3 Site Size and Location

The display site should be as large as possible and incorporate the following features:

- **Spectator Area:** An area for spectators of appropriate size to prevent overcrowding;
- **Safety Area:** A clear area between spectators and the firing area;
- **Firing Area:** Location from which fireworks are set off;
- **Fall out Area:** A clear area where the debris from the spent aerial fireworks land;
- **Bonfire area:** An area provided for a bonfire (if appropriate);

There should be a minimum distance of 50m between spectators and the firing area.

The firing site and the fallout area should be away from trees, combustible materials, buildings, parked cars, etc. Undergrowth on the site should be cleared and grass cut short in the vicinity of the display area.



The fall out area should be a minimum of 100m deep x 150m, this should be modified for certain types and sizes of firework.

The firing area should be a minimum of 25m deep x 50m.

Bonfires should be located at least 15m away from other areas, buildings roads etc.

## **4 Liaison with Local Authorities and Emergency Services and Firefighting Arrangements**

The Police should be contacted as soon as possible informing them of the location of the site and its layout including all entrances and exits. The Local Authority may need to be contacted regarding entertainment legislation. Contact should be made with the fire service at least 28 days before the event. They will be interested in:

- How the emergency services will be called;
- Access for emergency vehicles;
- Marshalling crowds and traffic in emergency conditions;
- Arrangement of spectators enclosures;
- Local firefighting arrangements;
- Buildings and other features nearby which could be affected by a fire.

An adequate means of access to the whole site, as well as to the display area, should be agreed with the emergency services, and be maintained before and throughout the display.

An adequate number of fire extinguishers and supplies of sand, buckets of water, etc., should be provided; certain stewards should be trained in the operation of firefighting equipment, as advised by the local fire service.

Provide at least two spectator exits from the site which are large enough, spaced well apart, clearly marked, kept free from obstructions and well lit.

Provide suitable litter receptacles throughout the spectator area.

Provide at least one suitably equipped first-aid point, staffed by a qualified first-aider.

## **5 Competent Display Operators**

A competent display operator should have sufficient knowledge, training and experience to set up and fire the fireworks which are to be used at the display, and clear them up after firing, in a way that will ensure the health and safety of the operator, the operators employees and other people who may be affected by the display.

## **6 Storing and Handling of Fireworks**

Under no circumstances should operators smoke when handling fireworks or on the firing site.

All fireworks other than those already set up for the display should be kept in a closed container, in an area of the site that is not accessible to the public.



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Keep the number of fireworks being worked on at any one time to a minimum.

Once fireworks have been set up, ensure that the firing area is not left unattended.

## 7 Firing of Fireworks

The fireworks used by display operators usually include British Standard BS 7114:1988 category 4 fireworks. These are not intended for sale to the general public and typically have little labelling on them. They often do not have complete fuse systems and are often used by display operators as components linked together by fusing to create larger fireworks. Because of this no detailed instruction on setting up and firing these fireworks are provided, the potential for an accident to occur is therefore significantly greater if handled by inexperienced operators.

The possibility and importance of a sudden change of wind should be remembered, as it can result in sparks and spent rocket sticks falling among spectators, and smoke obscuring the display.

All fireworks with aerial effects should be angled away from spectators, to ensure that remnants fall where they can cause neither injury nor damage (i.e. in the fallout area). Firing over the heads of spectators should be avoided.

Firers are recommended to wear substantial outer clothing made of wool or some fire-retardant material. Gloves, safety goggles, safety helmets and substantial footwear should also be worn.

Should a firework fail to go off, leave it for at least 30 minutes. In most cases it will then be best to immerse it in a bucket of water.

## 8 Clearing up After the Display

The firing, safety and fall-out areas should be kept free from spectators until the operator has had time to clear up and locate and retrieve any fireworks that have misfired.

The whole site should be checked for partly spent fireworks and other remains that could be hazardous.

Arrange for the whole site to be checked at first light to make a final check that the site is clear.

Ensure that the bonfire is completely extinguished and keep spectators out of the bonfire area until this has been done.

## 9 Spectator Control

All staff should know their duties if evacuation of the site becomes necessary. Arrangements and a drill for calling the emergency services should be pre-planned.

Spectators should be kept away from the firing site behind a suitable barrier. Firing should cease if spectators breach the barrier.

The back and sides of the firing site should be kept completely clear for the duration of the firing.



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The maximum number of stewards should be provided for crowd control. This should not be fewer than two for up to 500 persons, and one for each additional 250 persons, but the actual number should, if possible, be discussed with the Police. Every steward should be readily identifiable, e.g. by wearing a fluorescent jacket. The stewards should not be engaged on any duties which would hinder the prompt discharge of their duties in the event of an emergency, including the evacuation of the site, if necessary; they should be so placed as to be able to easily enter into the crowd. Overcrowding should not be permitted.

The number of persons within the firing site of the display should be limited to the minimum necessary for the operation of the display (in no circumstances are more than three persons likely to be necessary).

An adequate public address system should be provided for larger displays and some means of addressing the crowd for smaller displays.

No spectators should be admitted to the display with their own fireworks. Notice of this should be published in advance and exhibited at all entrances.

In enclosed areas, a sufficient number of entrances and exits should be provided for spectators to be admitted in an orderly manner and to permit ready dispersal at the end of the display. The possibility of a sudden influx of large numbers of people should be borne in mind.

## 10 Bonfires

Bonfires are not recommended. They are a hazard and may detract from the effect of the display.

However, if it is decided to have a bonfire, it should be sited in the designated display area and should be under the supervision of a competent person. It should be at a safe distance from the firework storage containers and from any 'set piece' display.

Flammable liquids should not be used to assist the ignition of the bonfire. The materials to be burnt in the fire should be carefully selected to exclude hazardous rubbish, e.g. aerosols, tins of paint, bottles, etc.

### FURTHER ADVICE

The Health and Safety Executive produces various leaflets and guidance documents detailing practical advice on firework display safety, the most appropriate being:

Giving Your Own Firework Display: How to run and fire it safely

HS(G) 124 ISBN 0 7176 6162 8

<http://www.hse.gov.uk/pubns/books/hsg124.htm>

Working Together On Firework Displays: A guide to safety for firework display organisers and operators

HS(G) 123 ISBN 0 7176 6196 2

<http://www.hse.gov.uk/pubns/books/hsg123.htm>

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