

Investigation and identification of fire caused by setting off fireworks

Wen-xia Ye*

Department of Fire Engineering, Chinese People's Armed Police Academy, Langfang 065000, China

Abstract

Investigation and identification of fire caused by setting off fireworks for fire investigator is a great challenge. Combined with fire cases, this paper analyzed the characteristics of fire caused by setting off fireworks. Fire more happened during the festivals and other important events. Building burning loses more serious external than internal, upper than lower. Many witnesses exist in the fire. Fire scene may have many fireworks residue. Then the paper proposed content of fire inspection and interrogation, inspection on the fire building outside ground, monitoring video equipment, recognition the location of fire origin and combustible in fire origin, obtain evidence of fireworks flying objects arriving fire origin and carry out fire scene experiment, interrogation about festival or other important events, fireworks and its display, children around the fire scene, meteorological condition. At last, the paper summarized identification factors of fire caused by setting off fireworks. Fireworks are setting off before the fire. Firework flying object can reach fire origin. Fire origin has combustible; combustible can be ignited by flying object of fireworks. The mode of fire and fire caused by setting off fireworks is consistent. Fire origin has the condition of fire spread. The paper will help for fire investigator to investigation and identification of fire caused by setting off fireworks.

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Peer-review under responsibility of the organizing committee of ICPFFPE 2015

Keywords: fireworks; fire disasters; fire investigation

Fire caused by setting off fireworks is one of the common causes of fire disaster. In fires caused by setting off fireworks, evidence easy loss, responsible party is not easy to cognize, fire cause is difficult to recognition, and fire disaster cannot settle effectively, complaint events often occur. Theory and practice research on how to investigate fire caused by setting off fireworks is less. Combined with fires happened in recent years, this paper discussed how to investigate fire caused by setting off fireworks.

1. The characteristics of the fire caused by setting off fireworks

1.1. Fire more happened during the festivals and other important events

At festivals and other important events, it's the tradition of setting off fireworks in China. Thus most fires caused by setting off fireworks during these events. Such as CCTV cultural center fire happened on lantern festival. The time of royal wan-xin international hotel fire in Shenyang, Liaoning province is New Year's Eve.

* Corresponding author. Tel.: +86-13231644263;
E-mail address: wjxy_ywx@126.com

1.2. Building burning loses more serious external than internal, upper than lower

Characteristics of building fires caused by setting off fireworks is burning from outside to inside, up to down. Fireworks first contact with the architectural area is exterior and upper, these parts first burn, and then spread to building interior, and spread to building lower through the construction of external thermal insulation material. Outside and upper of building combustion longer time, therefore building burning loses is more serious outside than inside, upper than lower.

1.3. Many witnesses exist in the fire

Because of the glaring and sound of fireworks, someone usually to watch fireworks display. So when fireworks cause fire, they can observe the process of fire development. In addition, personnel who live and work near the display site may hear sound and see something, etc. These people can also provide information for the fire investigator.

1.4. Fire scene may have many fireworks residue

After Fireworks setting off, fireworks shells and gunpowder residue may leave on the ground at display site. Besides, due to explosive force, many fireworks shells will be thrown some distance. Fireworks shells or powder particles can be found in a certain range from center of the display site. Fire investigators should pay attention to extraction them.

2. The main content of the fire scene inspection

2.1. Inspection on the fire building outside ground

Interval time between fireworks set off time and fire often is not long, sometimes fire happened during display. When received fire alarm, investigator should promptly go to the fire scene, begin inspection quickly, extract fireworks debris on the building outside ground, avoid responsible party cleanup display site. Such as a fire, the fire investigators failed to conduct fire scene inspection in time, the next day when fire investigators arrived fire scene, fireworks shells have been cleaned. It brings great difficulty in subsequent fire investigation.

After the extraction of fireworks debris, investigator should conduct an inspection on the name, type of fireworks, etc. Such as CCTV cultural center fire, through analysis fireworks debris, confirmed that fireworks is a kind of display shells, the main raw material of production of potassium chlorate, barium nitrate, magnesium and other elements. Its burning temperature is above 1700 °C. The explosion height is 150 ~ 180 m, covering 100 ~ 130 m diameter. Fireworks from the cultural center building nearest distance is only 30 m. Building height is 159 m.

2.2. Inspection on monitoring video equipment

The fire investigators should pay attention to inspect the inside and outside of the scene to find monitoring video equipment and extract monitoring video. Monitoring video can help fire investigators to confirm the fire spread from outdoor to indoor, or spread from indoor to outdoor, and origin of fire. It is important to inspect outdoor monitoring video equipment, not only inspect public monitoring video equipment, such as traffic monitoring equipment, but also inspect the unit or individual monitoring equipment to access fire information. Monitoring video plays an important role to identify fire cause in CCTV cultural center fire and royal wan-xin international hotel fire.

2.3. Recognition the location of fire origin

Fires caused by setting off fireworks, if it is burn indoor first, fire origin is often in the place such as the balcony, the window. Because fireworks flying object from the balcony, the window openings into room ignite combustible. If it is outdoor fire, fire origin often in roof or place where combustible accumulated outside. Therefore, when inspection fire scene, determine the location of fire origin is very important. Such as a fire, the bedroom balcony serious loss, other parts of the room slight loss, serious smoked. Fire investigators careful inspection balcony, identified fire origin on the balcony, and the balcony window is open. By interrogation hostess, she provides formation that she open window to sunning quilt at the day.

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