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Analysis of the Overview of the Active Fire Protection Measures in Nigerian Markets

Odaudu Ugbede Sunday

Department of Architecture
Kano University of Science and Technology, Kano, Nigeria
Email: arcodauduugbede@yahoo.com

ABSTRACT

The study and practice of mitigating the unwanted effects of fire is referred to as fire protection. The way to stop the spread of fire by means of the application of fire protection devices is known as active fire protection. Ways of protecting people from dangers of fire outbreaks, merit serious attention. The devices that can be used to protect a building as much as possible in the case of fire before the arrival of the fire brigade are called fire protection devices. The knowledge on how to use the installed facilities is important in tackling fire emergencies; otherwise, the reasons for their installation will be defeated and lack of such knowledge could hinder escape from fire hazards. Active fire protection measures in Nigerian markets were recapped with the aim of being informed of the need for adequate knowledge of fire protection devices that can reduce the spread of fires. Evaluating the functions and importance of fire protection devices as well as making the awareness of fire protection devices in markets in Nigeria are the objectives. The method adopted in this study is the review of relevant literature on fire outbreaks in markets. Relevant literatures were also reviewed on the active fire protection devices, and fire protection measures. The findings showed that, there is no study on the awareness of how to make use of fire protection devices in markets in Nigeria; subsequently, there is need for evaluation of active fire protection measures in Nigerian markets. From this study, it is expected that, people will be aware of the uses of fire protection devices in markets in Nigeria and this awareness shall reduce the spread of fire whenever it breaks out. It is also expected that, this study shall lay a foundation for further studying of active fire protection devices in markets in Nigeria. Thus, it is recommended that, adequate fire protection devices are installed in markets in Nigeria as well as creating adequate awareness on how to use them.

Keywords: Devices, Emergencies, Fire Protection, Mitigating, Nigerian Markets.

INTRODUCTION

Fire protection is the study and practice of mitigating the unwanted effects of fire. Active fire protection is a way to stop the spread of fire by means of the application of fire protection devices. Ways of protecting people from dangers of fire outbreaks, merit serious attention (World Fire Statistics Bulletin, 2012).Fire protection devices are the devices that can be used to protect a building as

much as possible in the case of fire before the arrival of the fire brigade. Annual fire inspections within markets can help by increasing the safety of firefighters and the first people to respond to fire outbreak during an emergency, by ensuring that minimum maintenance requirements are met. The International Fire Code states specifically that, fire alarm, sprinkler and standpipe systems should be maintained in an operable condition at all times (International Fire Code, 2006).

The most common fire protection gears are fire sprinklers and fire extinguishers, and firefighting services are provided in most developed areas to extinguish uncontrolled fires (Action Aid, 2006).Fire safety is achieved by a comprehensive system of measures, both physical and management, that collectively interact to provide a comprehensive system of fire safety, taking account of the building design, human behaviour in fire conditions and escape arrangements, management arrangements such as staffing levels, training and fire response, the abilities and the fire performance of materials (Scottish Government, 2008).The building itself is made of the fire load within the building, the potential ignition sources it contains as well as the measures provided to detect and curtail fire when it occurs.

Trained firefighters use fire apparatus, water supply resources such as water mains and fire hydrants or they might use A and B class foam depending on what is feeding the fire. Structures are developed with minimum compliance to sound planning requirements, hence fire outbreaks end up getting out of control resulting in losses that could have been avoided (Action Aid, 2006). While the growth of mega-cities and mega-risks like earthquakes capture headlines, far more, lives in urban areas are lost to everyday disasters including dirty drinking water, poor sanitation and fires (African Urban Risk Analysis Network, 2008).

Effective fire safety management requires recognizing all the potential risks associated with the premises and effectively carrying out an assessment of the adequacy of the measures provided or needed to combat the risk (Khan and Abbasi, 1995). A risk analysis indicates the proneness to fire outbreak and spread of fire and thus decide what measures must be taken to provide suitable arrangements for protecting people and properties in the premises from fire, and should ensure that the risk of fire occurring is reduced to the absolute minimum as well as the risk of fire spreading is minimized (Buchanan, 2001).

LITERATURE REVIEW

The knowledge on the use of installed facilities is essential in tackling fire emergencies; otherwise their installation becomes meaningless and lack of such knowledge could hamper escape from fire hazards (Kachenje *et al.,* 2010).Therefore, it is important that, where it is necessary, various firefighting equipment like sprinklers, aragonite automatic fire suppression system (FM200 fire suppression), street fire hydrants, fire hose reels, portable fire extinguishers, emergency lighting system, and fire alarm system, are being properly installed in market places in Nigeria for protection against fire outbreaks.

Fire Sprinkler

According to Fireline Corporation (2015) and Cintas Corporation (2016), a fire sprinkler is an extinguishing system which uses water as its primary extinguishing agent and is usually designed in accordance with National Fire Protection Association Standard. Sprinklers significantly reduce the effect of hot gases and smoke from the fire. However, sprinklers do not observably improve visibility in smoke during fire (Shields, 1999). Plate I shows a fire sprinkler system.

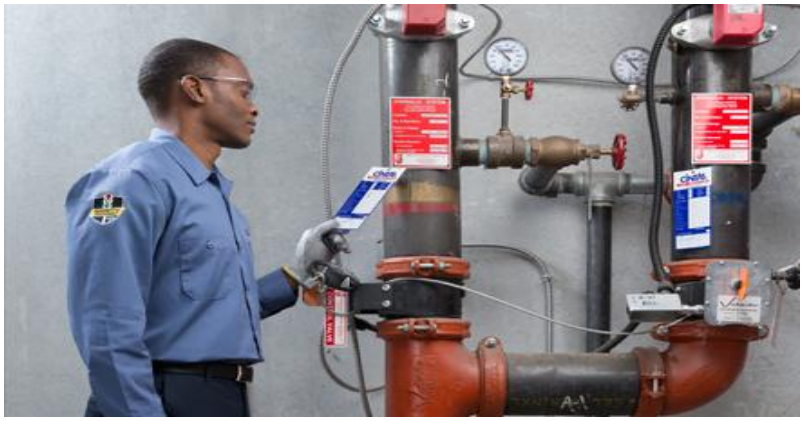

Plate I: Fire Sprinkler System [Source: Cintas Corporation, 2016 (http://www.cintas.com/fire-protection-services/fire-sprinkler-systems.aspx)].

Automatic Fire Suppression System

According to Word Press (2013), automatic fire suppression system is a waterless fire protection system that is released into the risk in a 10 second time frame. Fires are immediately suppressed by the agent.

This type of fire suppression system is usually used in medical facilities, telecommunication facilities, data and commercial centres. A fire suppression system is designed to protect home or business, and should be installed to provide a safeguard in

the event of a fire. There are various fire suppression systems in the market which include liquid-based solutions, as well as fire suppression systems which reduce gases or chemical agents (Word Press, 2013). Plate II shows an automatic fire suppression system.

Plate II: Automatic Fire Suppression System [Source: Word Press, 2013 (https://bestfiresuppressionsystems.wordpress.com/)].

Street Fire Hydrants

Street fire hydrants are vertical pipes, usually at the side of a street or road that are connected to the main water system of a town and can supply water for dealing with fires. Street fire hydrants provided within private development will be regarded as Fire Service Installations (FSI) required under the provision of Section 16 (1b) of the Buildings Ordinance, Cap. 123, Laws of Hong Kong (Fire Services Department, 2003).Plate III shows a street fire hydrant.

Plate III: Street Fire Hydrant [Source: Fire Services Department of the Government of the Hong Kong Special Administrative Region, 2003 (http://www.hkfsd.gov.hk/eng/faq_safety.html)].

Fire Hose Reels

Fire hose reels are located at strategic places in buildings to provide a reasonably accessible and controlled supply of water for fire extinguishing. Fire hose reel systems consist of pumps, pipes, water supply and hose reels located strategically in a building, ensuring proper coverage of water to combat a fire (Grundfos, 2016).Plate IV shows a fire hose reel.

Plate IV: Fire Hose Reel [Source: Grundfos, 2016 (http://www.grundfos.com/service/encyclopedia-search/fire-hose-reel-systems.html)].

Portable Fire Extinguisher

A portable fire extinguisher is a device which contains water or a special gas, powder or foam that is used to put off fires (Grainger, 2016).Almost all fires are small in their incipient stage and can be put out quickly if the proper portable fire extinguisher is available and the person discovering the fire has been trained to use it. Plates V, VI and VII show different types of portable fire extinguishers.

Plate V: Underwriters Laboratory (UL) Fire Extinguisher [Source: Grainger, 2016 (https://www.grainger.com/category/fire-extinguishers/fire-protection/safety/ecatalog/N-b08)].

Plate VI: Wheeled Fire Extinguisher [Source: Grainger, 2016 (https://www.grainger.com/content/qt-portable-fire-extinguishers-135)].

Plate VII: Fire Extinguisher Alarm [Source: Grainger, 2016 (https://www.grainger.com/content/qt-portable-fire-extinguishers-135)].

Emergency Lighting System

Emergency lighting system is lighting for an emergency situation when the main power supply is cut and any normal illumination fails (Safelincs Limited, 2015). The loss of mains electricity could be the result of a fire or a power cut and the normal lighting supplies fail. This may lead to sudden darkness and a possible danger to the occupants. Emergency lighting is normally required to operate fully automatically and give illumination of a sufficiently high level to enable all occupants to evacuate the premises safely (Allbrite Company, 2014). Most new buildings now have emergency lighting installed during construction; the design and type of equipment being specified by the architect in accordance with current Building Regulations and any local authority requirements. Plate VIII shows emergency lighting.

Plate XI: Emmergency Lighting [Source:Allbrite Company, 2014(http://allbrite.ie/emergency-lighting/)].

Fire Alarm System

A fire alarm system is a device that enable a fire to be detected at a sufficiently early stage, so that, people who are at risk can be made safe either by escaping from the fire, or by the fire being extinguished, in order to equally prevent extensive property damage (David and Matthew, 2005). Neither of these measures can be used until people are made aware of fire and the effectiveness of the fire detection and alarm system depends on the stage of the fire at which it is operated. In order for all the occupants to escape without too much difficulty, an early alarm should operate before the escape routes becomes smoke-logged to such an extent as will cause occupants to have difficulty finding their way out of the building. Plate XII shows a fire alarm.

Plate XII: Fire Alarm [Source:WELT Limited, 2013 (http://weltuk.com/FIRE-ALARMS)].

STATEMENT OF THE PROBLEM

Fire outbreak in market places is a recurring problem in Nigeria and is now a serious issue (Federal Fire Service of Nigeria, 2016). It has led to loss of lives, destruction of goods and valuable properties. Makanjuola *et al.* (2016) pointed out that, there are different types of firefighting equipment for public buildings. Since, markets are public buildings, it is therefore important that, where it is necessary, various firefighting equipment like sprinklers, argonite automatic fire suppression system (FM200 fire suppression), street fire hydrants, fire hose reels, portable fire extinguishers, emergency lighting system, and fire alarm system, are being properly installed in market places in Nigeria for protection against fire outbreaks.

AIM OF THE STUDY

The aim of this study is tore cap the active fire protection measures in markets in Nigeria, in order to be informed of the need for adequate knowledge of fire protection devices that can reduce the spread of fires.

OBJECTIVES OF THE STUDY

Evaluating the functions and importance of fire protection devices are the objectives of this study. Another objective is to make the awareness of fire protection devices in markets in Nigeria.

SCOPE OF THE STUDY

The scope of this study is the regional built-up markets in Nigeria. Regional built-up market is a market in a particular defined location or region, which is made up of different commercial buildings that contain lock-up shops, open stalls, restaurants, and other features of a market (Amiteye, 2015; Ngugi, 2015).

JUSTIFICATION OF THE STUDY

Several scholars have carried out researches on fire outbreaks in markets in Nigeria and different issues associated with these fire outbreaks have been pointed out. For example, whenever there is fire outbreak in markets in Nigeria, the Fire Service Department in most cases arrives late to the scene and also come with inadequate materials for fighting the fire(Ogeah and Omofonmwan, 2013). This means that, whenever there is fire outbreak in markets in Nigeria, there is always a problem of combating it. Some of the causes of fire outbreaks in Nigerian markets have been identified by some researchers. Fire outbreaks in markets in Nigeria are mostly traceable to electrical faults (Olaiya, 2013) andMann (2010) also identified some causes of fire outbreaks in Nigerian markets to be out of careless disposal of cigarette stubs, adulterated fuel, illegal connection of electricity, power surge, sparks, lighted match, stoves, cookers and gas cylinders.

In all these studies on fire outbreaks in markets in Nigeria, different causes of fire outbreaks were pointed out and different issues associated with them have been discussed but there is a gap in knowledge, which is the evaluation of active fire protection measures in markets in Nigeria and making the awareness of the uses of fire protection devices. Therefore, it is important that, this gap in knowledge is filled, in order to reduce the spread of fire whenever it breaks out in markets in Nigeria.

METHODOLOGY

The method adopted in this study is the review of relevant literature on fire outbreaks in markets. Relevant literatures were also reviewed on the active fire protection devices, and fire protection measures. Data were obtained from textbooks, journals, theses, reports, papers, archive and data base of institutions and the internet was also used to download information from various websites on the past fire outbreaks in markets and other commercial buildings in and outside Nigeria, in order to know their possible causes and other related issues.

FINDINGS

There is no study on the awareness of how to make use of fire protection devices in markets in Nigeria. Subsequently, there is need for evaluation of active fire protection measures in Nigerian markets.

SIGNIFICANCE OF THE STUDY

It is expected that, this study shall make people to be aware of the uses of fire protection devices in markets in Nigeria. The awareness of the uses of fire protection devices shall reduce the spread of fire whenever it breaks out. It is also expected that, this study shall lay a foundation for further studying of active fire protection devices in markets in Nigeria.

CONCLUSION AND RECOMMENDATIONS

Fire protection is the study and practice of mitigating the unwanted effects of fire. Active fire protection is a way to stop the spread of fire by means of the application of fire protection devices. Ways of protecting people from dangers of fire outbreaks, merit serious attention. Fire protection devices are the devices that can be used to protect a building as much as possible in the case of fire before the arrival of the fire brigade. The knowledge on the use of installed facilities is essential in tackling fire emergencies; otherwise their installation becomes meaningless and lack of such knowledge could hamper escape from fire hazards.

The aim of this study is to recap the active fire protection measures in markets in Nigeria, in order to be informed of the need for adequate knowledge of fire protection devices that can reduce the spread of fires. Evaluating the functions and importance of fire protection devices as well as making the awareness of fire protection devices in markets in Nigeria are the objectives. The method adopted in this study is the review of relevant literature on fire outbreaks in markets. Relevant literature were also reviewed on the active fire protection devices, and fire protection measures. The findings showed that, there is no study on awareness of how to make use of fire protection devices in markets in Nigeria, subsequently, there is need for evaluation of active fire protection measures in Nigerian markets.It is expected that, this study shall make people to be aware of the uses of fire protection devices in markets in Nigeria and this awareness shall reduce the spread of fire whenever it breaks out. It is also expected that, this study shall lay a foundation for further studying of active fire protection devices in markets in Nigeria. Thus, it is recommended that, adequate fire protection devices are installed in markets in Nigeria as

well as creating adequate awareness on how to use them.

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