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DAMAGE AND LOSS ASSESSMENT OF FIRE INCIDENTS IN OVIA NORTH EAST LOCAL GOVERNMENT AREA, SOUTH-SOUTH NIGERIA (2010-2015)

K. O. Ojo[1] and B. J. Akpan[1]

[1] *Department of Science Laboratory Technology, University of Benin, Benin-City, Nigeria Corresponding Author: K.O. Ojo Tel:- 08037999582*
Email: meetengrodu@gmail.com

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ABSTRACT

Increasingly, public and residential buildings have been subjected to electrical inferno particularly in recent times, and several lives and properties have been endangered in the process. In this study, the damages and losses incurred during electrical inferno in Ovia North East local Government Area from 2010-2015 have been carefully assessed. Documented and recorded information obtained from the University of Benin Fire Service Department were analyzed using the qualitative research method and was employed to determine the properties lost-saved ratio and the lives lost-saved ratio. This served as a measure of loss prevention and control during electrical inferno in the region. The dynamics of fire evolution and the constraints of fire fighting in the region were examined. Conclusively, possible safety measures to curb the menace of electrical inferno were drawn up and a step by step guide on how these measures can be achieved was recommended.

Key Word: Electrical Inferno, Properties Lost, Lives Lost.

INTRODUCTION

One needs to understand and respect the power of electricity and the role it can play in home fire. If the full benefit of the deregulation is to be enjoyed, standards have to be maintained in the utilization of electrical power. It can start in an instant and consume ones home in just minutes. It takes lives, injures victims, destroy homes, and steals precious possessions. Fire can harm all of us. (Orovwode2012). A fire needs three elements heat, oxygen and fuel, without which it will not start or spread (Roe 2017).

Fire is the second leading cause of accidental death in the United States (Brown 1998). Electrical inferno is known to constitute about sixty five percent (65%) of the total fire incidents in the United States and in Nigeria, hence the isolation and careful examination of the ugly menace of Electrical inferno is pertinent. The most inclusive and direct interpretation of electrical inferno is a fire involving some type of electrical failure or malfunction. Any equipment powered by electricity can have such malfunction (Hall 2013).

In Nigeria, the National and State Fire Service Department has the statutory responsibility of extinguishing, controlling and preventing fire, saving and protecting lives and properties and other such humanitarian works required of them (Fire service Act 2004). Accompanied therewith

is the responsibility of securing and providing (when needed) data of fire incidence in Nigeria. However, over the years, several constraints have dipped the effective discharge of this responsibility; this has resulted in numerous loss of life, injuries and loss of properties. This study is aimed at investigating and analyzing the damages and losses due to electrical fire incidence in Ovia North East Local Government Area. We attempt to expose the dynamics of fire evolution. That is, the sources of and the factors leading to most fire outbreak and its accompanied losses hence attempting to minimize and manage these losses.

A critical view of properties exposed to electrical inferno versus properties lost was made. Also, lives exposed to electrical inferno versus lives lost to it was carefully examined hence the live lost-saved ratio was developed and the constraints of fire fighting was examined.

Data was collected from the University of Benin Fire Service Department database, the data comprised of Number of fire calls received, Numbers of lives lost, Numbers of lives saved, estimated properties loss, estimated properties saved and number of rescue made from 2010-2015.

MATERIAL AND METHOD

This study was conducted in Ovia North East Local Government Area, Benin-City, Nigeria. Information collected from the University of Benin Fire Service Department was qualitatively analyzed. The information consisted of Number of fire calls received, Number of lives lost, Number of lives saved, estimated properties destroyed and estimated properties saved and number of rescue made between 2010-2015. This is represented in the table below

Table 1: Statistics of Electric Fire in Ovia North East Local Government (Average per annum) from 2010-2015.

Year	No. of Fire Calls	No. of Lives Lost	No. of Lives Saved	Estimated Properties Destroyed (N)	Estimated Properties Saved (N)	Rescue
2010	57	10	11	22,340,000.00	97,870,000.00	5
2011	84	4	31	32,675,000.00	49,980,000.00	7
2012	98	25	161	231,500,600.00	350,543,890.00	--
2013	94	26	126	90,987,000.00	372,670,000.00	--
2014	107	14	86	876,768,500.00	2,654,602,200.00	13
2015	130	6	42	2,976,465,400.00	7,567,700,700.00	--
TOTAL	570	85	457	4,210,736,500.00	11,093,366,790.00	25

RESULT AND DISCUSSION

With an increasing number of fire calls over the period 2010-2015, the capability of Fire-Fighters within the region was scrutinized. Their response and salvage ability was subjected to discussion hence the percentage of properties lost and properties saved compared to the total properties exposed to electrical inferno was analyzed and tabulated in Table 2 below.

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TABLE 2: Statistics of Properties Lost Versus Properties Saved in Ovia North East Local Government Area (2010-2015)

Years	Total Cost of Properties Lost (N)	Total Cost of Properties Saved (N)	Total Cost of Properties Exposed To Fire (N)	Percentage of Properties Lost (%)
2010	22,340,000.00	97,870,000.00	120,210,000.00	18.60
2011	32,675,000.00	49,980,000.00	88,655,000.00	36.90
2012	231,500,600.00	350,543,890.00	582,044,490.00	39.80
2013	90,987,000.00	372,670,000.00	463,657,000.00	19.60
2014	876,768,500.00	2,654,602,200.00	3,531,364,700.00	24.80
2015	2,976,465,400.00	7,567,700,700.00	10,544,166,100.00	28.20
TOTAL	4,210,736,500.00	11,833,365,790.00	15,330,097,290.00	27.90

Furthermore, the capabilities of Fire-Fighters was scrutinized based on the havoc raked by electrical inferno in terms of lives lost, this was analyzed and presented in table 3 below.

Table 3: Statistics of Live Lost Versus Lives Saved in Ovia North East Local Government Area (2010-2015)

Years	Total No. of Lifes Exposed To Fire	Total No. of Lifes Saved	Total No. of Lives Lost	Percentage of Lives Lost (%)
2010	21	11	10	47.60
2011	35	31	4	11.40
2012	186	161	25	13.40
2013	152	126	26	17.10
2014	100	86	14	14.00
2015	48	42	6	12.50
TOTAL	542	457	85	19.33

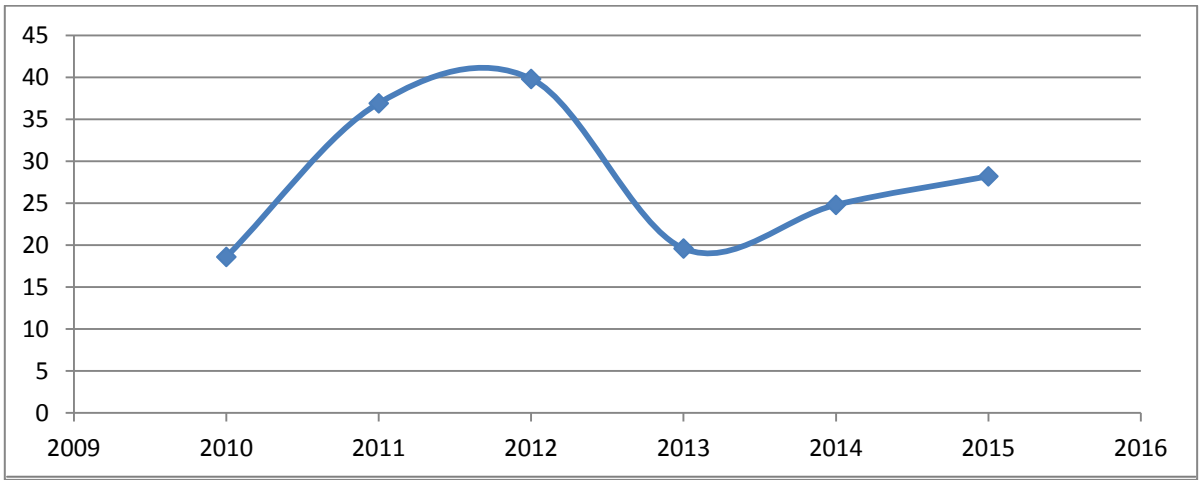

Figure 1: Percentage of Properties Lost to Electrical Inferno from 2010-2015 Source: University of Benin Fire Service Department.

Despite the recent improvement in loss control and loss prevention during rescue operation by the University of Benin Fire Service Department, properties worth billions of naira and several lives have been lost. An alarming increase is observed in percentage of properties lost in light of total properties exposed to inferno between the years 2011-2012 with a peak period of about 39.8% destruction in 2012. However, significant progress in loss prevention was observed in 2014-2015. Also, a great percentage of lives were lost compared to the number exposed to the inferno in 2010 with 47.6% of the lives lost in the aforementioned year. Also of serious concern is the number of fire calls within the period in view. This translates to an increased number of fire cases in Ovia North East Local Government Area.

DYNAMICS OF EVOLUTION OF ELECTRIC FIRE

There are no broad based statistics of causative factor of electrical inferno in Ovia North east Local Government Area as no concrete information was availed by the Edo State Fire Service Department. However, their findings tend to agree with a study by Hall et al (2003) when he examined one hundred and five (105) buildings. The scope of the study done by Hall was expanded by CPSC to provide a summary of the causative factors of Electrical inferno in public buildings (Hall 2003). These factors are represented in the chart below.

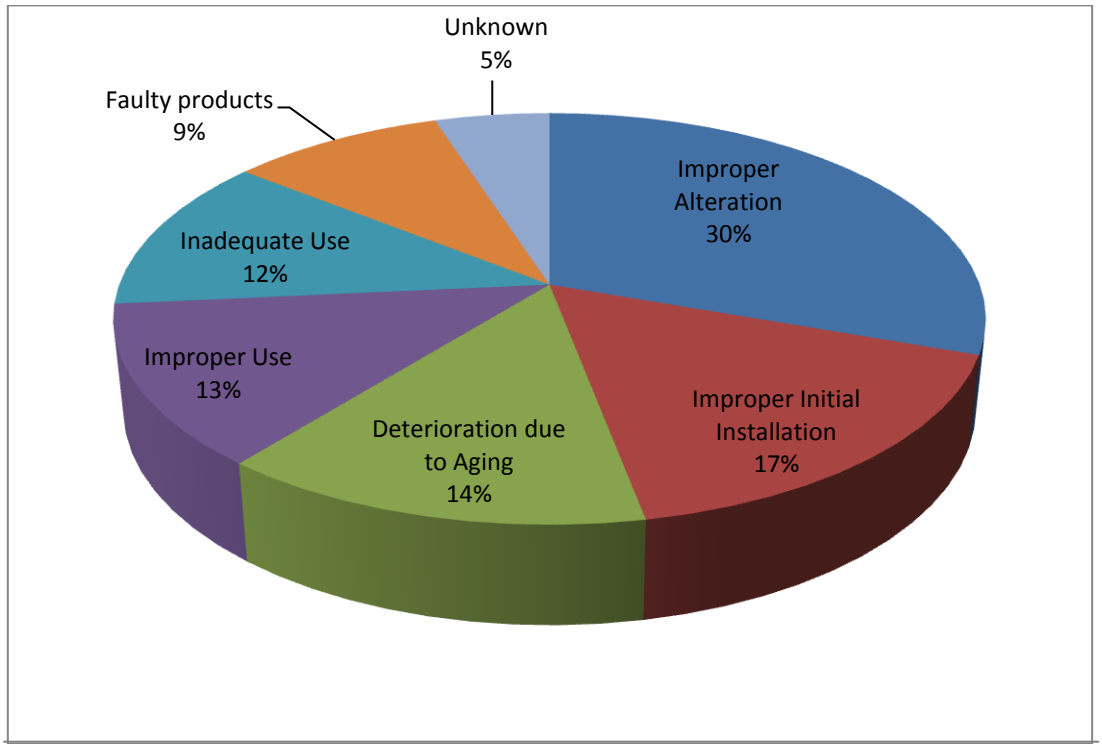

Figure 2. Causative Factors of Electrical Distribution System of Fire
Source: *CPSC*

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It can be observed from the chart above that Improper Alteration was the major cause of Electrical fire in these buildings, triggering about 30.4% of the total inferno. The next major cause of electrical inferno was Improper Initial Installation as it triggered 16.6% of the total cases, deterioration due to Aging caused 13.8% of the inferno, Improper Use caused 12.7%, inadequate use contributed 12.2% of the total cases, next was faulty products which caused 9.3% of the inferno while unknown causes is believed to rake 5% of the havoc (Babrauskas 2003).

The United States Department of Fire classified Electrical Fire by Equipments involved in Ignition as follows.

Table 4: Classification of Electric Fire by Equipments Involved in Ignition

Equipments Involved in Ignition	Fires (%)	Civilian Death (%)	Civilian Injuries (%)	Direct Properties Damaged (Millions) (%)
ELECTRICAL DISTRIBUTION OR LIGHTING	**48**	**67**	**45**	**56**
Unclassified Wiring	15	22	12	16
Outlet or Receptacles	6	5	5	6
Branch Circuit Wiring	5	6	3	7
Fuse or Circuit Breaker Panel	3	4	2	3
Extension Cord	3	7	7	4
Service Supply Wiring from Utilities	2	1	1	2
Meter or Meter Box	2	0	0	1
Unclassified Lamps, Lights, Fixture and Signs	1	1	1	1
Incandescent Light Fixture	1	1	2	1
Wiring from Meter Box or Circuit Breaker	1	1	0	2
Surge Protector	1	1	1	2
Unclassified Cord or Plug	1	3	2	1
Power (Utility) Line	1	1	1	1
Table or Floor Lamp	1	0	1	1
Detachable Power Cord or Plug	1	2	1	1
Fluorescent Light Fixture or Ballast	1	1	1	1
Other Unknown Electrical Distribution or Lighting Equipments	3	2	4	4
EQUIPMENTS OTHER THAN ELECTRICAL DISTRIBUTION OR LIGHTING EQUIPMENT	46	32	50	37
Fan	6	3	7	5
Dryer or Washer	6	0	4	4
Portable or Stationary Space Heater	4	11	5	4
Air Conditioner	4	2	5	3
Water Heater	4	0	2	1
Range	3	4	3	2
Refrigerator, Freezer or Icemaker	2	1	2	3
Microwave Oven	2	0	2	1
Dishwasher	2	1	1	1
Television	1	1	2	1
Furnace or Other central Heating Units	1	0	1	1
Entertainment Equipments Other than	1	2	2	1

Television				
Computer or Other Office Equipments	1	2	3	2
Portable Cooking or Warming Device	1	8	2	1
Oven or Rotisserie	1	0	0	0
Heat Tae	1	0	0	0
OTHER KNOWN EQUIIPMENT OTHER THAN ELECTRICAL DISTRIBUTION OR LIGHTING EQUIPMENTS	6	7	7	7
No Equipment Involved	5	0	3	6
Unclassified Equipments Involved in Ignition	1	1	3	1
TOTAL	100	100	100	100

Constraints of Fire Fighting in Nigeria

The effective discharge of the responsibilities of fire fighters in Nigeria which include but not limited to extinguishing, controlling and preventing of fire and saving lives and properties have been sorely affected by many factors. Some of these factors are enumerated below.

Funding: With the Fire Service Act of Nigeria not firmly stressing the need for its proper funding by the concerned arm of government, Fire-fighting in Nigeria has over the years been subjected to inconsistent and insufficient funding. This coupled with the exorbitant equipment cost and high running cost has drastically hindered service delivery at every level in Nigeria.

Poor Welfare of Fire Fighters: This has greatly reduced dedication and commitment to service delivery. Poor remuneration, absences of insurance and an overall near zero motivation has crippled emergency and distress response.

Training and Re-Training of Fire-Fighters: In line with the ever dynamic causes of fire evolution, there is a need to educate and train our fire men on up to date techniques in fire fighting and loss control. This can be achieved by improving the training capacity of the Fire department to cover live fire training and other relevant trainings.

Poor Infrastructure/Social Ammenities: Absence of good access to good road, water, adequate transport facilities, power and healthcare facilities have over the years negatively impeded effective fire-fighting in Nigeria.

***Communication*:** Communication is an essential part of fire fighting. Communication not only aids early reporting of fire incidence to appropriate quarters but is an essential of part of the arts of fire fighting as radio communication problems are viewed as a contributing factor to fire fighters death and injuries (Varone 2003).

***Data Management*:** A fire data/report goes beyond being a compelling legal requirement to insurance companies, it can also provide a more beneficial service to the Fire Department by yielding insight into the nature of fire and injuries in their jurisdiction (Fire Data Analysis 2004). Data analysis helps to gain insight into the fire problem which in turn can affect the operations of the department. It also improves resource allocation for combating fire and helps identify training needs as to the areas which updates are required in fire fighting techniques.

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Poor Safety Attitude of the Populace: There is a compelling need to educate the general public on fire safety information and practices such as safety behaviors, timing, precautionary measures, escape and its pre-planning, injury assessment and prompt reporting of fire incidents. There is also a need to introduce Fire Safety education programs, educational messaging, grants and awards and many other motivating incentives (Hall 2013).

In this study, we have assessed the damages and losses caused by electrical inferno in Ovia North East Local was the cause of sixty-seven percent (67%) of civilian death, forty-five percent (45%) of injuries, destroying fifty-six percent (56%) of properties destroyed by electrical inferno. Equipments other than Electrical Distribution and Lighting Equipment was discovered to be the next major cause of electrical inferno leading to forty-six, thirty-two, fifty and thirty-seven percent of fire, civilian death, injuries and direct property damage respectively. No equipment involved cases raked the least havoc with five, nil, three and six percent of fire, civilian death, injuries and direct property respectively.

This work also re-echoed the need to fund our fire fighters and also train and re-train them while equipping them with and on the use of state of the arts equipments. Research on fire technology should be promoted and a collection of comprehensive fire literature developed, published and disseminated to all necessary quarters.

Lastly, the public need to be properly educated and informed on safety information regarding causes and escape planning during electrical inferno. Also, educational messages and programs, grants and awards and basic safety equipments need be availed are appropriate quarters to help combat the ugly menace of electrical inferno.

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