

# Status of Fire Incidence in Batangas Province, Philippines from 2009-2013

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**Abstract** - *Fire as a calamity can harm lives and affect the economic status of community. Its incidence in an area causes alarm not only to the people but more to the government. It is for this reason that the researchers prompted to conduct this study to present the profile of fire incidence in Batangas Province, Philippines in terms of number of frequency of occurrence of fire, types of involved structure, causes of fire, cost of damage and classification of fire; establish the trend of fire incidence from 2009-2013; and propose plan of action. Records from the Bureau of Fire Protection were utilized to present its status. It showed that the highest number of fire incidence was recorded in 2013 in which majority of the involved were residential structures caused by faulty electrical wiring. The study revealed the trend of fire incidence in the Province is increasing yearly and might still increase in succeeding years. An action plan to reduce fire incidence in Batangas Province was proposed to help the government in developing new strategies to further enhance fire prevention plan.*

**Keywords:** *Fire incidence; Faulty electrical wiring; Batangas province*

## INTRODUCTION

Fire is defined as a “rapid burning of a combustible material with the evolution of heat and usually accompanied by flame, and is used by human beings [1]. From the earliest times, fire has been regarded as one of the elemental forces shaping life on Earth. Fire possesses both powerful destructive and enabling properties, whether occurring within the natural and physical world or when ignited deliberately or accidentally by humans. Its captivating flames continue to fascinate us, its heat and light sustain our lives, its elemental energy underlies our technological civilization and, when in an uncontrolled state, fire can and has caused destruction, damage and loss of life of great magnitude [2].

There are two major causes of fire incidence which are either nature related or human related in nature. In terms of human related incidence, there are also two major causes of it, either accidental or intentional. On the other hand, there is only one effect of fire incidence which is damage that can be classified as property damage.

In 2009, deadly bushfires swept through the southern state of Victoria in Australia. The incident resulted for the death of 173 and 500 injured people. More than 2,000 homes were destroyed and an estimated cost of damage worth 4.4 billion Australian dollars. Environmental impact is a particular concern when bushfires occur because it contributes to climate change at a massive scale. Another incident that alarmed the world happened in Indonesia where a forest fire emerged due to the effect of El Niño. It affects neighbouring countries such as Malaysia, Singapore, Thailand and Philippines due to its haze. There were 19 persons who died and an estimated 500,000 cases of respiratory tract infections were reported. An estimated cost of damage worth \$47 billion affected the country’s economy.

During 2012, Philippines topped in the list of countries with the most number of people killed by natural disasters in which fire is one of its major causes. About 115 incidents of fire were recorded where 52,349 people were affected and 95 people died, and an estimated cost of damage worth P1.09 billion was recorded during the year [3].

In the past years, Batangas Province suffered from many fire incidents like what happened in the Julian Pastor Memorial Market in Brgy. Cuta, Batangas on 2013 where 15 stalls were affected with an estimated cost of P4 million worth of damage. Another was the fire incident that happened in the parish convent of Basilica of the Immaculate Conception where a fire started due to short circuit of the decorated Christmas lights.

Fires are one of the few calamities of which we can prevent to minimize its effect to some extent. Fire preventive measures, fire suppression plans and fire drills have been employed both by authorities, private and public establishments to avoid incidence of fire, minimize its casualty and lessen the cost of damage. Also, the creation of PD 1185 or the Philippine Fire Code, which was amended by RA 9514 or the Revised Fire Code of the Philippines of 2008 gave a huge help in reducing the occurrence of fire in the country by setting standards to structures and punishments to those persons who will not comply or violate the contents of this law.

Another solution to the problem regarding fire was the creation of R.A. 6975 that gave birth to the Bureau of Fire Protection with its primary mission to ensure public safety through prevention and suppression of all kinds of destructive fires with the active support of the community. With this, fire prevention and suppression in the country were enhanced and the implementation of RA 9514 was enforced by the Bureau.

As what had been practiced by the Batangas - Bureau of Fire Protection, every celebration of March, the Fire Prevention month, seminar and competition for fire volunteers of various organizations is held with aim to practice what they have learned and increase awareness among community members.

In this light, the activities already instituted by authorities and the preceding incidents prompted the researchers to focus on this area particularly, to present the profile of fire incidence in Batangas Province and to help the government in developing new ideas and intensifying specific strategies to improve the plan and measures concerning fire prevention using the results of this study.

### OBJECTIVES OF THE STUDY

The study focused on status of fire incidence in Batangas Province from 2009-2013. Specifically, it aimed to present the profile of fire incidence in Batangas Province in terms of number or frequency of occurrence of fire, types of involved structure, causes of fire, cost of damage and classification of fire; to establish the trend of fire incidence from 2009-2013; and to propose plan of action based on the result of the study.

### METHODS

#### Design

This study employed retrospective method of research. A Retrospective Study is a kind of research design where the researchers study a phenomenon by

looking back at events that have already happened and then analyzing data which are already collected. It is looking at what is already in hand and applying statistical measures to it to describe the information in simpler way to provide better understanding and more efficient solution [4].

### Participants

This research used retrospective method. However, this was supplemented by informal interview among selected Bureau of Fire Protection Officers for better presentation on how fires are classified, how the cause of fire can be determined and how to greatly increase the prevention of fire incident.

### Instrument and Procedure

Existing records and information from the Bureau of Fire Protection's Office were utilized in this study. Documentary analysis was the data gathering procedure utilized for the study.

### Data Analysis

After the collection of the needed data, the researchers utilize the aid of a statistician for a precise and accurate processing of the collected information and data. The data were categorized based on the first objective to provide comparisons in every year so that the researchers could also establish and determine the trend of fire incidence in Batangas Province, Philippines. Tabulations are provided for the ease of comparison between different categories.

Set of data was analyzed using percentage distribution. Tabular presentation of data was utilized to present and compare the gathered data.

### RESULTS AND DISCUSSION

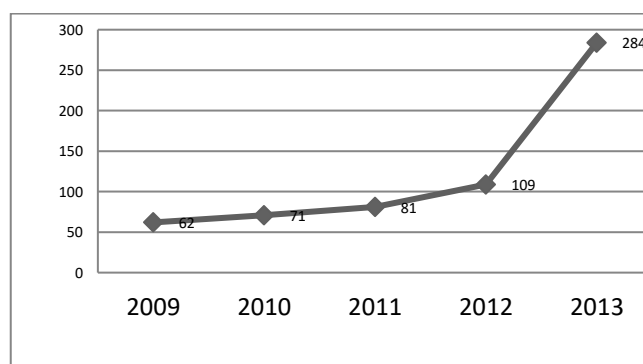
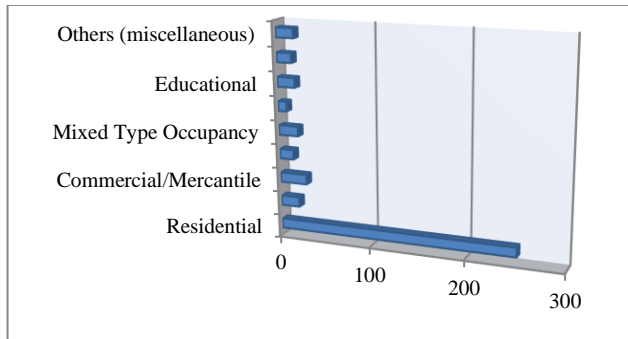


Figure 1. Number or Frequency of Fire Incidence in Batangas Province

Figure 1 shows the number or frequency of fire incidents in Batangas Province on year 2009 to 2013, which reflects that most fire incidents happened on the year 2013 with the frequency of 284, followed by 2012 with 109, then 2011 with 81. Year 2009 has the least fire incidents happened with the frequency of 62, followed by year 2010 with 71.

The number of frequency of fire incidents in Batangas Province increased on the year 2013, due to the height of the Barangay election campaign period where arson cases were used as a black propaganda by some election candidates. Another reason is that some business facilities want to gain insurance claims because of the low economic income that they experienced during this year which was caused by increased temperature experienced. Also, according to HEMS, (2012), there were notable differences in the epidemiology of fires and fire-related casualties between the periods 2005 to 2009 and 2010 to 2012. The average number of fires reported per year from 2010 to 2012 was greater than that from 2005 to 2009. Similarly, the average number of fire-related casualties per year was greater from 2010 to 2012.



**Figure 2. Types of Involved Structure to Fire Incidence in Batangas Province**

Figure 2 shows the types of involved structure to fire incidents in Batangas Province as per the record at Batangas - Bureau of Fire Protection. The most involved structure is the residential type with the frequency of 251 or 62.75%, followed by commercial/mercantile type with 29 or 7.25%, mixed type occupancy with 21 or 5.25%, industrial/factory with 20 or 5%, educational type and other type of structures both with 19 or 4.75%, places of assembly with 16 or 4%, while storage type got 15 or 3.75%, business type/government offices got 9 or 2.25% and institutional type was the least involved type of structure recorded with a frequency of 1 or 0.25%.

Residential type of structure ranked first in the types of involved structure to fire incidents in Batangas

Province from 2009-2013 because most fire incidents happens at households in which majority of the houses in Batangas Province were made up of light and concrete materials which are very combustible. In addition to this, most activities at home which are possible cause of fire are cooking and use of electrical appliances like charging phones, continuously plugged TV, refrigerator and electric fan that may involve fire in case of short circuits. In a discussion paper of Velasco [5], it was said that majority of fires involved residential areas from 2010 to 2012. This represents a significant risk for families, most especially for those who live in slums or squatter areas. The Fire Code of the Philippines, or Presidential Decree No. 1185, was enacted in 1977 and covered all types of structures. Enforcement of the Code (which is now Republic Act 9514, or the Revised Fire Code of the Philippines of 2008) in informal settlement areas, such as slums or squatter areas, is a challenge. It is likely however that fire prevention measures and systems are more aggressively carried out in commercial areas than in residential areas due to rate and estimated properties involved [11], [12].

Ahrens [6] stated that there was great number of home structure fires per year during the five-year-period of 2007-2011 in the United States. He presented the estimated average of civilian deaths, injuries and direct property damage per year. In this study, it was said that almost three-quarters of the reported fire incidents came from structure fires and 84% of it were from one or two family homes, including manufactured homes. The remainder occurred in apartments or other multi-family housing.

Table 1 shows the causes of fire incidents in Batangas Province from 2009-2013. Based on the table, it can be seen that electrical connections was the main cause of most fire incidents in Batangas Province with the frequency of 155 or 25.54%, followed by fire incidents caused by electrical appliances with 142 or 23.39%, grassfire got 139 or 22.90%, fire incident that are under investigation got 45 or 7.41%, open flame due to unattended cooking/stove got 24 or 3.95%, others or fires incidents caused by vehicular accidents got 20 or 3.29%, open flame due to torch or sulo got 14 or 2.31%, incendiary device mechanism or ignited flammable liquids got 12 or 1.98%, lighted matchstick or lighter got 10 or 1.65%, lighted cigarette butt got 7 or 1.15%, LPG explosion due to direct flame contact or static electricity got 5 or 0.82%, fires caused by chemicals, electrical machineries and pyrotechnics all got 2 or 0.33%, while bomb explosion was the least cause of fire incident with a frequency of 1 or 0.16%.

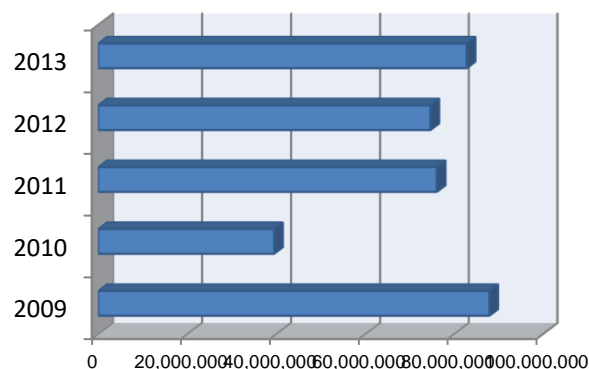
**Table 1. Causes of Fire Incidents in Batangas Province**

Indicators	f	%	Rank
Electrical connections	155	25.54	1
Electrical appliances	142	23.39	2
Electrical machineries	2	0.33	14
Spontaneous combustion	0	0.00	17.5
Open flame due to unattended cooking/stove	24	3.95	6
Open flame due to torch or sulo	14	2.31	8
Open flame due to unattended lighted candle or gasera	27	4.45	5
LPG explosion due to direct flame contact or static electricity	5	0.82	12
Lighted cigarette butt	7	1.15	11
Chemicals	2	0.33	14
Pyrotechnics	2	0.33	14
Lighted matchstick or lighter	10	1.65	10
Incendiary device mechanism or ignited flammable liquids	12	1.98	9
Lightning	0	0.00	17.5
Bomb explosion	1	0.16	16
Under investigation	45	7.41	4
Grassfire	139	22.90	3
Others ( vehicular accident)	20	3.29	7
<b>Total</b>	<b>607</b>	<b>100</b>	

As houses age, the electrical wiring can become “worn out”, causing dangerous predicaments within the walls that homeowners cannot see, especially, those over 40 years old term. Connected to electrical connections is use of electrical appliance that caused fire such as flat iron, cellular phones, hair dryer, refrigerators and lamps are less likely assumed to cause fire since they are used regularly [7]. According to the research conducted by the National Statistical Coordination Board (NSCB), that within that four-year time frame of 2009-2012, the top three reported causes of fire incidents were faulty electrical wiring/connection, unattended open flames, and neglected electrical appliances or devices [8]. Further, certain aspects of fire epidemiology did not change since 2009 however. The most common causes of fires were still faulty electrical wiring and neglected open flames. Fires still most frequently occurred in NCR and least in Regions 2, 8, and ARMM. Metro Manila still had the most number of fires, and Quezon City and Manila remained the cities with the most number of fires in the country.

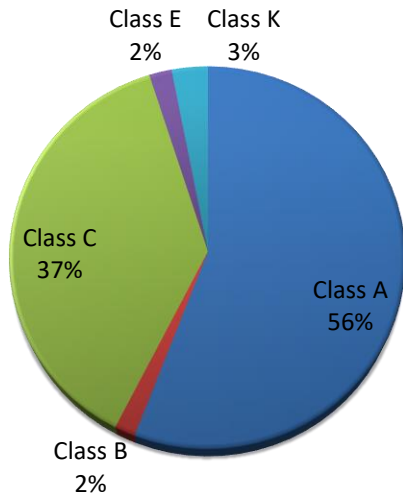
Figure 3 shows the cost of damages of fire incidents in Batangas Province from 2009-2013 as per record from Batangas - Bureau of Fire Protection. Year 2009 got the highest cost of damages with the cost of Php87,968,500 or 24.36%, followed by year 2013 with

Php82,844,836.97 or 22.95%, 2011 got Php76,080,645 or 21.07%, while 2010 got the least cost of damages due to fire incidents with the cost of Php39,504,100 or 10.94%, followed by year 2012 with Php74,650,947 or 20.68%.

**Figure 3. Cost of Damage due to Fire Incidence in Batangas Province**

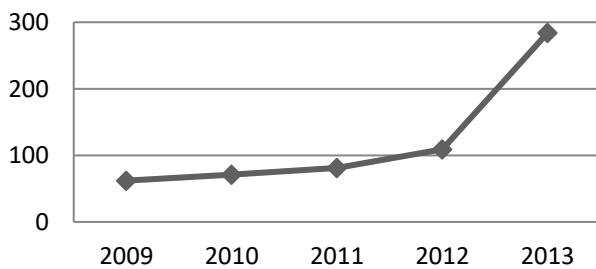
Every year the cost of damages due to fire incidents in Batangas Province increases which may be inferred due to the qualities of properties involved in a fire incident. Also, maybe due to the delay in the response of the authorities assigned to the task of suppression of fire. The economic and human costs of fires are great. In 2012, the World Fire Statistics Commission (WFSC) estimated that the annual cost of fire losses around the world was 1 percent of global GDP. This is equivalent to billions of dollars in direct losses due to damaged property. However, other costs of fires include direct costs (e.g. health care management of burns) and indirect costs (e.g., lost wages, prolonged care for deformities and trauma, and commitment of family resources), which are just as significant but are difficult to measure [9]. Indirect costs are often imprecisely measured because of the intrinsic inaccuracy of methods used to calculate them. Nevertheless, whether direct or indirect, the economic costs of fires are a significant burden.

In a report by Andrade and Carvajal (2013) from Inquirer.net, a blaze hit a school building on Herbosa Street, Tondo, Manila, destroying a room where new computers and a stack of school supplies were being kept. Chief Insp. Leo Carta of the Manila Fire Department stated that the fire occurred due to firecrackers that may have been accidentally thrown at the school. The results of the initial investigation showed the fire started at the second floor and caused around P1 million worth of damage.



**Figure 4. Class of Fire involved in Fire Incidence in Batangas Province**

Figure 4 shows the classes of fires involved in fire incidents in Batangas Province from 2009-2013. Class A fire obtained the highest frequency of 441 or 55.82%, Class C with 297 or 37.59%, Class K with 24 or 3.038%, Class E with 15 or 1.898%, Class E with 15 or 1.899% and Class D with 0 or no recorded instances of fire incident under this classification. Class A fire is the major class of fire involved in most fire incidents in Batangas Province from 2009-2013 because most structures involved were residential type of structures made up of light and concrete materials which are very combustible. While there is no recorded class D fire because there is no reported fire incident involving ignitable metals within the five-year period.



**Figure 5. Trend of Fire Incidence in Batangas Province from 2009-2013**

Figure 5 shows the trend of fire incidence in Batangas Province from 2009-2013, which reflects that the trend of fire incidence in Batangas Province is increasing due to the previous mentioned causes and circumstances.

Based on the data and results gathered, it can be inferred that the efficiency of the actions or plans

implemented during these years are ineffective in reducing the fire incidence in Batangas Province. Also, natural phenomenon such as ElNiño and LaNiña are considered as great contributors to the increasing number of fire incidents in the past years. And lastly, we can also consider the fact that the height of the election during 2013 contributed to greatly increase the number of fire incidents recorded by the Batangas - Bureau of Fire Protection.

**Proposed Action Plan to Reduce Occurrence of Fire Incidents in Batangas Province**

**Key Results Area 1:** Well disseminated information on fire prevention strategies and Fire safety education  
**Persons Involved:** BFP, LGU, Representative of NGO, Barangay Chair, Company owners, School administrators

**Strategies/Activities:**

- A seminar may be called upon by the provincial government for BFP units and representative in charged to environmental protection from local government or municipalities to discuss fire prevention strategies wherein these concerned units may start planning their own information dissemination strategy to the Barangay level.
- Representatives from non-government organizations may also be invited to assist the local government and BFP in disseminating information.
- BFP personnel may conduct periodic company and school visitations to conduct lessons among students and employees on the basic of fire prevention.
- Annual fire drill may be intensified by company/establishment owners wherein hundred percent of the staffs and employees shall participate.

**Key Results Area 2:** Monitoring and strict implementation of RA 9514

**Persons Involved:** BFP & Barangay officials

**Strategies/Activities:**

- The City/Municipal Fire Marshall through the help of fire volunteers may ask assistance from Barangay officials to assist in monitoring the implementation of RA 9514 in Barangay level.
- The Bureau of Fire Protection may designate fire safety inspector who will conduct random inspections of establishment electrical wiring, electric transformer, and electric cables in his area of responsibility.
- Issuance of a valid Fire Safety Inspection Certificate (FSIC) may be done only after conduct of fire safety inspection or after abatement and compliance to the

recommendation was made by the building operator/administrator.

**Key Results Area 3:** Well-maintained Fire Safety Installations

**Persons Involved:** BFP, Company owners, School administrators

**Strategies/Activities:**

- Upon the inspection conducted by the BFP, use of fire retardant materials may be suggested to provide longer burning interval for property and to provide individuals with fire safety protection.
- Fire safety installations may be checked at least once every month by the BFP or by any other appropriate agency.
- Installation of smoke detectors, fire alarms and sprinkler/extinguishing systems may be required by BFP to companies engaged in the use of hazardous and extremely volatile chemicals.
- Smoke detectors, fire alarms and sprinkler/extinguishing system specifically in laboratory rooms, canteen/cafeteria and computer rooms may be required to schools and other establishments.
- Fire walls may be constructed on house and several business structures to prevent the spread of fire in case of occurrence.

**Key Results Area 4:** Augment the number of BFP personnel who will supervise and inspect building premises

**Persons Involved:** BFP, Company owners, Community leaders

**Strategies/Activities:**

- The BFP may conduct fire brigade trainings and seminar annually to encourage participation of community members who may become fire volunteers.
- Companies and establishments may assign authorized person who will be in charge of the physical facility of the premises.

**CONCLUSION AND RECOMMENDATION**

The highest number of fire incidence was recorded in 2013 in which majority of the structures involved were residential areas caused by faulty electrical wiring. The trend of fire incidence in Batangas Province, Philippines increases yearly and might still possibly increase for the next succeeding years. An action plan to reduce fire incidents was proposed.

It is recommended that the Bureau of Fire Protection may penetrate Barangay areas to conduct seminar among homeowners regarding fire prevention measures at home to reduce the risk of fire in residential areas. Information campaign may be expedited by the Bureau of Fire Protection to increase the collaboration and participation of the community. The Bureau of Fire Protection may utilize the involvement of the community through recruitment, selection and training of fire volunteers to augment the strength of the department (BFP). The Bureau of Fire Protection may consider the adaption of the contents of the action plan. Researchers may present the paper/results of the study for dissemination and utilization.

**REFERENCES**

- [1] Schneid, Thomas D. (2000): *Disaster Management and Preparedness*, pages 9-10, 61.
- [2] Woodrow, B. (2010). World Fire Statistics, Geneva Association Information Newsletter, <https://goo.gl/jZ36ju>
- [3] Citizen's Disaster Response Center (2012), *2012 Philippine Disaster Report*. (2-1-16 10:59 PM) from <https://goo.gl/PkjJwb>
- [4] Retrospective Study.(n.d.).In *Alleydog.com's online glossary*. Retrieve from <https://goo.gl/jqhaE5>
- [5] Velasco, G. N. V. (2013): *Epidemiological Assessment of Fires in the Philippines, 2010-2012*, Discussion Paper Series No. 2013-35, pages 15-17.
- [6] Ahrens, Marty (April 2013): *Home Structure Fires*.
- [7] eBay (June 9, 2014): *5 Signs that You Should Replace Electrical Wiring, 1995-2016* eBay Inc. (1-30-16, 11:02 AM).
- [8] Antonio, Z. (2015): *14 Fire Prevention Tips Every Homeowner Should Never Forget*, ZipMatchBlog (1-30-16, 11:05 AM).
- [9] World Health Organization. (2012, May). Burns Fact Sheet. Retrieved March 7, 2013, from World Health Organization: <https://goo.gl/MDvQk1>
- [10] Andrade, J. I., & Carvajal, N. C. (2013). 4 fires hit Metro Manila on first day of 2013, url: <https://goo.gl/CzjuY4>
- [11] Fire Code of the Philippines, President of the Republic of the Philippines. (1977, August 26). (2-1-16) from <https://goo.gl/q3UZh7>
- [12] Revised Fire Code of the Philippines, 14<sup>th</sup> Congress, 2<sup>nd</sup> Sess. (2008, December 19) from <https://goo.gl/XFUHTv>