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# An Assessment of Fire Safety Measures and Management in India

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***Abstract: Developing countries like India there are a major loss life and property due to inadequate fire safety measures. In India fire contributes 5.5% total accidental deaths. This paper discusses about various aspects by which the assessment of present fire safety measures and management in India could be unstated.***
***Keywords: Fire Safety, Fire safety management, Fire assessment, Indian Codes and by-laws, Fire Accidents in India***

## I. INTRODUCTION

Fire tragedies are not new term for India. There is no day when we do not hear in news or read in newspaper about fires causing destruction to life and property. Since Independence, India has witnessed several fire related accidents which had caused huge losses of innocent lives and damaged property worth billion. The report released by National Crime Records Bureau states that fire contributes 5.5% of total accidental deaths as reported in India[1]. Another survey study published by Pinkerton and Federation of Indian Chambers of Commerce and Industry (FICCI) 2013 mentions that in the year 2010-11 there were total 22,187 major fire calls reported, out of which 447 lives were lost and 2613 got injured[2].

The reasons generally reported for these infernos are Electrical short circuit followed by LPG leakage. Throwing light on some facts here, over 25 % of fire accidents across the globe are electrical related whereas in India, the incidence rate is around 56 %[3]. Though these reasons are the most blamed but negligence of administration and lack of fire safety measures cannot be ignored.

The years gone by has seen many upheavals as far as fire safety scenario is concerned.The recent major fires that occurred in various parts of country during the last few years, reinforce the view that a fire can happen at any place. There has been a lot of awareness on the subject after learning from harsh experiences of past major fires since 1985 onwards but the momentum had now picked after 21/11 terrorist attack incident at Mumbai. It is observed that the authorities swing into actions only after an unfortunate incident is short lived; everything is forgotten without taking any corrective measures to minimize the chances of re-occurrence of such disasters.

### *A. Fire Service in India*

The entire Constitution of India there are just two words “Fire Service” which is listed in schedule 12 that is referred to under Article 243 W which deals with devolution of powers, authorities and responsibilities to Municipalities, etc. by the state legislature. Directorate General Civil Defense, Ministry of Home affairs is responsible to provide advisories to the state governments on fire prevention, protection, legislation, training and awareness related matters.

The Fire Services in many States are still the concern of the resource starved local bodies. The Fire Services in India are generally ill-organized and ill-equipped. Fire services in India lack in funding and due to this financial implication it is struggling to implement the action plan as recommended by standing fire advisory committee/council (SFAC) which was set up by Government of India.

As per findings of JPS foundation organization we are catering risk with 1705 fire stations which should be 70,869 as recommended by SFAC.[4] The fire service is ill organized as most of the higher posts are filled up by IAS/IPS officers. Some places have political

[1](National Crime Records Bureau, 2014)
[2](Pinkerton; FICCI;, 2013)
[3](M.Srinivas, 2013)
[4](JPS Foundation)



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ministers as heads. Obviously their stakes are transitory. Suitable fire officers with potential are not finding vacancies at higher Administration institution for training for command and control. The Chief of fire services India therefore work under the direction of officials who are not having experience in this field which let the system slow down. The fire services are also ill-equipped due to which it remains heterogeneous and non-conducive to effective protection against increasing incidents of fires. As there is shortage of 97.59% of fire station and as a result each one have to cater a bigger area and situation get worse with the narrow and traffic filled jams which restricts the fire service vehicles to reach the location on time. The average time taken by fire service vehicle to a fire call is 30 min and by this time the fire situation gets worse. The situation further get complex when the fire fighters don't get proper equipment to control the situation. The shortage of firefighters which is 96.7% across the country makes the entire system impaired[5]. To quote an example out of 2800 staff 330 post are vacant in Mumbai Fire Brigade[6].

*B. Codes & Bylaws*

In our country though exhaustive life & fire safety provisions have being included and described in National Building Code of India-2005, the provisions being only recommendatory hardly gets implemented except in few states where these have been made mandatory by amending building-bye-laws. Out of all bye-laws in India, Delhi Building Bye-laws are the best in so far as Fire and Life safety provisions are concerned, and also in the degree of implementation. This is particularly so since it has the additional solid support of another important and unique legislation in the form of "Delhi Fire Prevention and Fire Safety rules 1987", which give vast powers to the chief fire officer, even to seal buildings or premises which are considered unsafe and hazard to public safety.[7]

*C. Growth of High Rise Buildings*

Mushrooming of high-rise buildings (15 m and above in Indian context) due to shortage of land in urban areas of the country poses different categories of risk & hazards. The buildings in Delhi NCR itself stand almost 100 meters high and there are only 8 Ariel ladders which are not enough to carry out necessary firefighting operations[8]. Initially to obtain 'No objection Certificate' the fire safety systems are installed, these systems & arrangements if are available then they are not maintained and sustained as they should be. The fire load on each building is also growing higher and higher by use of interior decorative materials most of which are either combustible or gives off toxic fumes when exposed to heat of fire. Such heat or smoke shall always travel upwards through an opening and invariably becomes the root cause of numerous deaths on upper floors. Experience has shown that concealed spaces within a building such as spaces between ceiling and false ceiling, horizontal and vertical ducts etc., tend to act as flues/tunnels during a fire. Provision should therefore, be made to provide fire stopping within such spaces. No weightage is given to the compartmentation, which becomes a cause of the fire spreading from one corner to entire building. Designing of the high rise buildings is the most important aspect, but it is rather unfortunate that architects neither attach enough importance to the fire safety during the design stage nor they visualize the requirements of fire service personnel. In fact the fire prevention in any building starts from the table of an architect. However, it has invariably been seen that the architects during designing of the buildings jeopardized occupant's safety on the pretext of aesthetic beauty/ modern building or projections, thus leading to reduction of outreach of fire appliances and tall ladders. However, it has been observed that in metro like Delhi the human tendency is still as same as it was before last three decades, when there was no major work in this field, still the owners of the high-rise buildings have miser tendency to save money and unfortunately don't want to spend it on the modern inbuilt fire protection arrangements, in the countries abroad very heavy percentage of total budget cost is provided for catering perfect protection.

*D. Training and awareness*

Fire week is observed from 14th to 20th of April every year, 'Fire Safety Week' produced a good response from the people, who applauded and cheered the mock drills displayed by firemen. But, the concept of 'fire safety' as such seems alien to the people and the breach of norms is a hard reality. There is lack of awareness among the people and it is most often that becomes the reason of loss of lives. Negligence in fire safety management, ignoring the hazards unintentionally or intentionally and breaching fire safety regulations is the common scenario observed across the country.

[5](JPS Foundation)
[6](Crisis in fire dept: Acute shortage of manpower is just one of many woes)
[7](Menon & Vakil, 2003)
[8] www.dfs.gov.in



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A study conducted by Indian market research bureau (IMRB) exhibits a comprehensive picture of the awareness scenario in India. It says that 40% of visitors of public places or buildings in major cities in India are unaware of location of fire exits which discloses the lack of signages and instruction. In hospitals as mentioned in the report that 40% of employees are not aware of fire evacuation presents a serious life safety issues as hospital employees are accountable for evacuation of patients and visitors and this situation is not much better in other occupancy buildings. All those who were surveyed reported they had fire alarm system in place though there is a deep lack of awareness of the steps that should be taken is a fire or other critical issue occurs.

Conversely, with the emergence of multinational companies, corporate and with series of infernos since past decades forced awareness and the trend is now growing towards improvement of fire safety measures and management in India. There is a growing aspiration of the expanding Indian middle class also means that people expect fire safety to be available to them as a basic amenity.

Now with infusion of Disaster management as a subject in school and colleges the awareness is certainly tilting to positive future. There are now many new Institute providing professional courses on Fire safety management & engineering and the subject is getting the desired emphasis as earlier there was only one National college in Nagpur which trained all the fire professionals. The new taste is now more towards fire prevention measures instead of firefighting as this is now second to the list.

## II. CONCLUSION

The Fire service as such can continue to be with the states and their Municipalities. Giving them all India character needs concurrence of the States but some advisory council directly under the PMO can be initially entrusted with the task of eventually having some percentage of fire services cadre from All India services which can be created by Legislation process.

The National Building Code, 2005 required to be more specific and having objective based solution apart from this measures to be searched out so it could be better implemented and help achieving better fire safety standards across the India.

Designing a safe building and providing the necessary passive and active fire safety provisions is the need of the day. Architects and designers shall incorporate fire professionals in creating new designs and shall not play with the codes and the intent of the codes shall be properly understood. The building owners and building management shall take the necessary steps to make the fire safety systems reliable by ensuring proper maintenance and monitoring of the system at the same time necessary budgetary allocation shall be formulated in this regard.

Last but not the least, ways and means shall be explored by administration and building management to create awareness among the citizen at all levels of society so that they understand and appreciate the necessity of the same.

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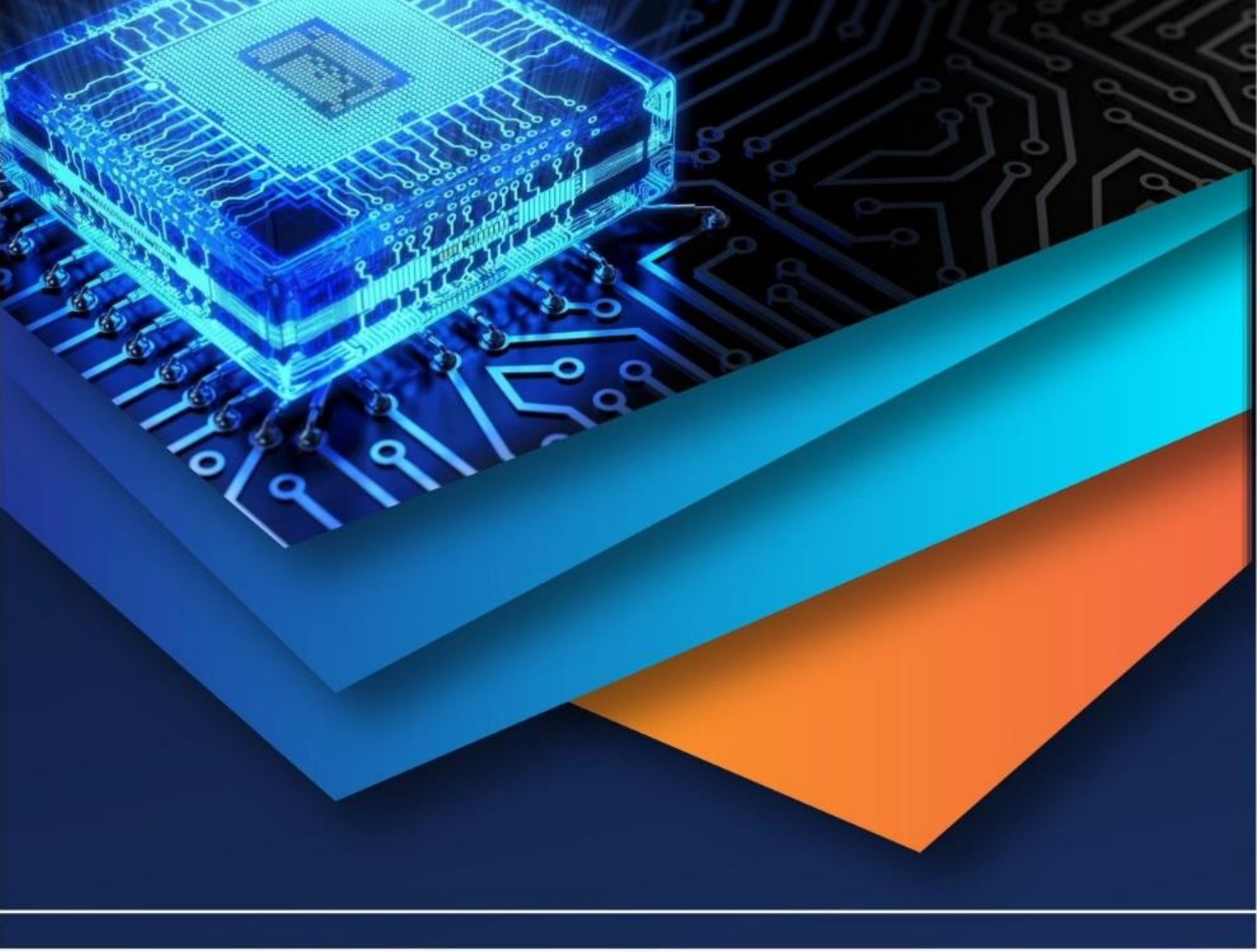

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