



## FIRE AND SAFETY MANAGEMENT IN HOSPITALS IN KERALA

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**KEYWORDS :** Alarm, Arson, Case law, Detection, Emergency arrangements

### Introduction:

It is important to have a basic knowledge about how a fire occurs and behaves with in a building. Essentially fire is a chemical reaction .A carbon based material mixes with oxygen and comes in contact with something hot enough to heat this mixture so that combustible vapours are produced.If this comes in contact with an ignition source such as an open flame,a fire occurs.

Once visible flames appear the fires destructive forces increase exponentially.The flaming stage of a fire will start with rapid increase in heat levels, initially along the room's ceiling and then through out the entire space.During the first two ,three minutes ceiling temperature can reach 1000 Degree C. At that point the room and all with in it are completely destroyed.

The fire can then spread through open door ways and wall penetrations or through concealed wall and ceiling cavities to other spaces in the building. If not put out at the right time the fire can lead to total loss of the building and its contents including men and materials.

Common fuels found in hospitals are for eg: paper ,wood and plastic furnishings, textiles, chemicals, gases and other combustible components of the building .Typical ignition sources include electrical and lighting equipments ,heating and air conditioning systems ,cigaretteuse, cooking, office equipments, extention cord, food and beverage preparations and warming equipments.

**Aim:** The following are the important aims and objectives of fire and safety management in hospitals.

- 1.) Improve worker Safety: All the different categories of workers are equally important and their safety at the work place is to be ensured by the authorities. If the workers felt unsafe due to negligence of authorities they may not be ready to continue their service for long periods which will definitely affect the image and reputation of the hospital.
- 2.) Ensure Health care workers Safety: Physicians, Surgeons, Nursing Staff, Attendants, Orderlies, Pharmacy Staff etc. are included in the list of health care workers. Ensuring Safety to them is very important.
- 3.) Ensure occupational Safety: During the Course of Service in the hospital, the employees may Contract diseases due to health care negligence. This has to be prevented.
- 4.) Empowering Hospital Staff to speak up about Safety-4 tips
- 5.) Improve Patient and Worker Safety
- 6.) OSHA Worker Safety in Hospitals Programmes.
- 7.) To keep Hospital Staff Safe
- 8.) Impart Education and Training about Worker Safety in Hospitals
- 9.) Help Reduce Hand in Fumes
- 10.) Introduce Quality Management
- 11.) Ensure Safety to in-Patients and Visitors

**Methods:** Various Methods could be used for collecting information about the fire and safety arrangements made in different hospitals. The exact method will vary according to the requirements of the investigator. The following are the more important methods.

- 1.) Questionnaire
- 2.) Personal Interview

- 3.) Random Sampling
- 4.) Surway Method
- 5.) Historical Method: Historical method is used in the preparation of this article.

### Results: CHANGES TO HOSPITALS AND RELATED FIRE-SAFETY ISSUES

Hospitals have become safer over the past quarter century. As noted above, the number of fires in hospitals has dropped substantially since 1989, due largely to reductions in flammable materials and improved staff training. Another factor is that smoking is no longer permitted except in specific circumstances by the Joint Commission.<sup>4</sup>

The advantages of improved emergency preparedness training were evident during Hurricane Sandy in 2012, when dozens of hospitals on the East Coast were safely evacuated or cared for their patients using emergency power. This event proved that well prepared hospital staff can defend-in-place when they need to, and can evacuate without loss of life when necessary.

When fires do occur in hospitals today, improved fire alarm systems and sprinklers help contain damage. And factors such as universal room design and reduced crowding help when evacuation is necessary. The following results are also worthy of mention.

- **Increased emphasis on emergency management.**
- **Improved fire alarm systems.**
- **Additional requirements for automatic extinguishing equipment**
- **Staff training expectations**
- **Increased emphasis on emergency management.** The Joint Commission (the primary accreditation agency for health care organizations in the United States) requires hospitals to have a thorough emergency management program; recent severe weather problems, such as hurricanes on the East Coast and tornadoes in the Midwest, have raised the issue to an even higher priority. Fires and explosions are among the emergencies the program must address, according to the Joint Commission.
- **Improved fire alarm systems.** Hospital fire alarm systems and policies have improved over the past quarter century. Among the improvements is the expanded use of addressable fire alarm systems, which provide firefighters with more information and help them pinpoint the source of a fire. Another advance is the increased amount of communication between fire alarms and other hospital systems. For example, when a fire alarm is activated, the system will switch the elevator system to a fire setting, enable audible exit notification systems, and manage HVAC system
- **Additional requirements for automatic extinguishing equipment.** Requirements for sprinklers have grown over the years, and the result has been better suppression of hospital fires. According to data from the National Fire Protection Association, between 1980 and 1984, automatic extinguishing equipment was present in 47% of hospital fires; between 2007 and 2011, that figure had risen to 78%.<sup>5</sup> In hospital fires in which the sprinklers operated effectively, the fire was contained to the room of origin 92% of the time.
- **Staff training expectations.** Hospital staff is much better trained today in emergency preparedness. For example, staff are now

expected to be ready to "defend-in-place," as mentioned above. This includes understanding the RACE protocol- Relocate, Alarm, Contain, Extinguish -which instructs staff dealing with a fire to move patients to safe areas (or keep them in their rooms, if preferable), alert emergency personnel, contain the smoke and flames to the point of origin as much as possible, and deploy a fire extinguisher, if possible.

**Conclusion:** Over time, an increased understanding of the many factors that contribute to the risk of fire has led to positive developments in the fire protection of commercial structures. Improvements in public fire protection systems and services ,as well as increased use of private active or passive systems through fire protection and loss control engineering ,has meant an over all decrease in the cost of fire .

A discussion of the factors affecting insurance premium rate demonstrates that although building construction type is one factor used ,there are many other equally important considerations when determining a property's level,fire risk , and its insurance premium. A similar level of fire safety can be achieved by various means . The sum effect of all fire safety factors should be weighed ,and a variety of active and passive fire protection meassures can be assessed and market factors considered, optimizing both fire safety and over all cost for a commercial building.

Wood Costruction has benefitted from all that has been learned regarding good design and appropriate active and passive fire protection meassures. The evolution of Methods of construction has resulted in an enhanced level of fire protection,as reflected in the present fire loss statistics show that wood frame construction can result in low fire – less costs and that presence of sprinklers can further reduce that low cost by almost half.Consequently,well designed wood construction is a cost effective means of protecting commercial endeavors from the risk of fire loss.



**DISCUSSION**

There is now a fast growing awareness among the modern architects and engineers to plan design and construct the buildings in such a manner that the safety of the occupants is assured to the maximum possible extent In the event of out break of fire in the building .Once the fire starts, it tends to ignite all the combustibile materials in the surrounding areas and in case it is not checked it may spread to other parts of the building . If the fire is not controlled with in the reasonable period it may lead to the collapse of the entire structure. It is not possible to attain absolute safety from fire but by adopting certain measures it is definitely possible to provide reasonable degree of safety from fire . From the study of the fire accidents in the past it is analysed that fire causes damage to the building and its contents, where as the by product of the fire i.e., the smoke nd the hot toxic gases cause maximum damage to human life smoke reduces visibility and the hot toxic gases produce suffocating effect and combined of the two is to bring about mass panic which in tern causes maximum danger to life.

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