

# Appendix

## Case studies of some infamous incidents

Case studies of some infamous incidents characterized by rapid fire growth have been highlighted here. These incidents serve as valuable examples for understanding the dynamics and challenges associated with quickly spreading fires, which may be hard to predict.

1. **The One Meridian Plaza fire in 1991, Philadelphia** – The fire ignited on the 22nd floor of the building. As reported, only three people were present, who were involved in the job of refinishing wood work. The fire was started in the pile of rags which were soaked in the linseed oil (Chubb, Jennings and Routley 1991).

The building's construction materials also contributed to the severity of the fire. The building was constructed with a curtain wall, which is a non-load-bearing exterior wall made of glass and metal. This type of construction allowed the fire to travel vertically up the building's exterior and spread quickly through the floors. In this unfortunate incident, 3 firefighters lost their life after being trapped in the building's stairwell during the fire. The firefighters were exposed to high levels of smoke and heat during their attempts to extinguish the fire and evacuate occupants from the building.



*Figure 34 One Meridian Plaza fire*

(Source:  
[https://en.wikipedia.org/wiki/One\\_Meridian\\_Plaza](https://en.wikipedia.org/wiki/One_Meridian_Plaza))

2. **The Caracas Tower fire in 2004, Venezuela** – The Caracas Tower fire occurred on October 17, 2004, in Caracas, Venezuela, and resulted in the deaths of at least 17 people. The fire started in the building's electrical room and quickly spread to the upper floors due to the lack of fire-resistant materials in the building's construction. (Moncada March/April 2005)

One of the primary reasons for the evacuation failure here was the lack of an effective evacuation plan and proper training for building occupants. The fire alarm system in the building did not function properly, and the public address system was inadequate, which made it difficult to notify building occupants of the fire and give them instructions for evacuation. Additionally, the stairwells in the building were not clearly marked, and some were obstructed, which hindered evacuation efforts. Another factor that contributed to the evacuation failure was the building's design, which had limited escape routes. The building had only three

stairwells, and they were narrow, making it difficult for occupants to evacuate quickly and safely.



*Figure 35 Caracas tower fire, Dubai*

*(Source: [https://en.wikipedia.org/wiki/Caracas\\_tower](https://en.wikipedia.org/wiki/Caracas_tower))*

- 3. The Torch Tower fire in 2017, Dubai** – The reported cause of the fire was a faulty electrical wiring in one of the apartments on the ninth floor. The fire quickly spread up the building's exterior cladding due to the strong winds and combustible cladding material, which contributed to the severity of the fire. A delay in the evacuation was observed in this case because a proper emergency evacuation plan was not in place and a communication gap was observed between the firefighting team and the occupants.



*Figure 36 Torch tower fire, Dubai*

*(Source: [https://en.wikipedia.org/wiki/Fire\\_torch\\_tower](https://en.wikipedia.org/wiki/Fire_torch_tower))*

4. **The Grenfell Tower fire in London, England in 2017-** The infamous Grenfell tower fire incident occurred on June 14, 2017, in London, England. The fire broke out in the 24-story building, causing the deaths of 74 occupants. The fire reportedly began in a refrigerator-freezer in one of the flats on the fourth floor and rapidly spread up the outside of the building due to the building's cladding system. The cladding, which was installed during a recent refurbishment of the tower, was made of flammable material.



*Figure 37 Grenfell tower fire, London*

*(Source: [https://en.wikipedia.org/wiki/Grenfell\\_tower](https://en.wikipedia.org/wiki/Grenfell_tower))*

The other main reason of such large number of casualties was to have the “Stay Put” strategy. The "stay put" strategy instructed by the firefighting team to occupants to remain in their apartments unless they were directly affected by the fire, but in this case the strategy totally failed. The fire spread rapidly throughout the building, largely due to the combustible cladding. The fire spread between apartments and compartments, and the building's design and construction did not contain the fire as intended.

**“Five years on, "stay put" remains the policy for fires in most high-rise buildings” – BBC News**