Ringling Circus fire, Hartford, Connecticut, USA, 1944

- 163 people died
- 200 people were confined to hospital as a result of panic and burn injuries
Ringling circus claimed to be the world's largest menagerie. The posters advertised 100 clowns and one thousand animals.
- View looking eastwards. Note fire hydrants in main road.
- Dressing tent and sideshow top were well separated from the big top.
Plan of big top

- Note location of fire in men’s toilet, wind direction, the narrow exits, the presence of animal runways and position of most bodies.
Ringling Circus data

- The one and half acre Big Top tent was 130 m by 55 m with semi-circular ends. The paraffin-treated tent fabric was supported by heavy poles held by guy ropes fixed to stakes.

- There was tiered seating accommodation for 9000 patrons and there were circus staff of over 1300.

- The seating stands were 10.5 ft high at the rear and there were roughly 18 rows of loose seats.

- It was said that ushers could fit in more chairs per row than designed for so that they stuck out into the aisles.

- There were 9 exits including the front entrance which was about 20 ft wide.
The main exits were at the ends. At the time of the fire two narrow exits on the north face were blocked with animal runways (caged enclosures) used to get wild animals safely on and off the two animal act stages.

Seating in the reserved areas was not fixed to the floor.

The circus provided four all-purpose water tank trucks each with 50 ft of hose. It seemed that the water trucks were used primarily to water the animals.

There were also water buckets on site, but no hose reels or other form of hand-held extinguishers in position.
The circus in use

- Elephants leaving the big top. Imagine what might have happened if fire had started when elephants were in the tent.
- Dense packing of visitors and ramped seating can be seen.
Fire can be seen through tent roof at an early stage
The tent roof well alight. People moving away from fire.
The tent fabric has burnt away and the timber seating is involved in fire.
Ringling circus – the fire

- On the day of the fire it was a blazing hot 88 degF.
- The fire, attributed to careless smoking, is thought to have began in a canvas-enclosed mens toilet about 20 ft from the main entrance.
- Attempts to extinguish it with three 4-gallon buckets of water failed
- Someone shouted ‘Fire’ but most people were watching the high wire act and did not take much notice; some thought it was part of the show.
- Attempts to pull down the flaming side wall failed but it was too late – the flames had reached the paraffin-treated roof fabric.
The fire spread onto the tent fabric and, encouraged by wind, flames rapidly travelled eastwards across the under surface of the tent fabric and also, later, burnt through the ropes holding the poles in place.

At the early stage of the fire there were still lions in the caged ring and an usher had shouted ‘Please keep your seats. We know about the fire, we will take care of this’.

When the flames spread across the roof the crowd roared with panic and people in the grand stands (the reserved areas) stood up and the loose chairs were pushed over in a clatter.
Ringling circus – the fire, continued

- People lost their balance on the narrow boards and fell over taking down those in front like dominoes. Other people were entranced and did not move – a phenomenon called ‘collective disbelief’ by some psychologists.

- As an announcer asked the audience to please leave their seats in an orderly manner the power went out cutting him off.

- The roof over the main entrance burned eastwards, while the band continued to play over the shouts and screams, and the crashing of grand stand chairs. Men were flinging chairs out of the way – the chairs weighed 8lb and were effectively missiles. The younger and stronger pushed the older and weaker over chairs, knocked them down and trampled on them. People had to crawl over the east animal chute while there were still lions inside.
Ringling circus – the fire, continued

- After finding the east exit full of people, people went back up the grandstand and jumped down the 12 ft drop and most escaped under the sidewall.

- After the fire the bodies on the top of the runways were found fused together while some people underneath were still alive and were eventually dragged free when the fire brigade arrived.
The escape provisions were very inadequate. The NFPA building exits code required one 22 inch unit of exit width for each 100 persons. Assuming all the exits were available for use by patrons the circus had 43 units but required 91, but because two exits were obstructed it seemed that approximately 3000 people would have to use the one remaining narrow exit (representing 3 exit units) on the north side.
There were supposed to be 18 fire extinguishers under the wooden seat stands – they had been delivered but not positioned. There were no ‘No smoking’ notices.

Seating in the reserved areas was not fixed, whereas the NFPA code required that when ever there were 200 or more seats they should be fixed to the floor.

The circus painted their chairs by dipping and over the years the coating had become thick. There was a lot of timber used on the grandstand walkways and seating supports, and this accounted for the severe fire after the roof fabric flashed over.
Most of the fatalities were caused by burns as the flaming canvas fell and ignited occupant’s flimsy summer clothing.

The first fire officer to attend the fire reported that within 10 minutes from the start of the fire the tent was completely consumed and the poles were down and the chief task was to extinguish the blazing timber stands and extricate the bodies.
Ringling fire – observations continued

- Fire fighters faced problems with equipment. They had to lay a very large length (900ft) of hose; and the hose couplings on the four water trucks were not the usual standard 2.5 inch.

- It seems that these equipment inadequacies had no effect on the number of fatalities as the fire had taken place with great speed and before any fire fighting by the fire brigade could have any effect.

- Flame-proofed fabric was reportedly used by the Army and Navy, and there seemed no good reason why it should not be used for public assembly tents. A compromise could be to flame-proof at least the canvas side walls.
Ringling fire — observations cont’d

- The number of fatalities would have been greater if the local hospital had not been prepared for war. The hospital was well stocked with supplies of plasma and oxygen for treating severe burn injuries.

- Doctors on the scene believed that the number of fatalities may have increased by 50% to 90% if plasma had not been available.

- As the NFPA noted in its report, the circumstances relating to this fire appeared on first sight unfavourable: the fire started on the windward side and was wind-driven through the rest of the tent.
Ringling fire — observations cont’d

However, if the same fire had occurred during the elephant parade which took place a few minutes earlier there could have been a stampede adding to the panic.

Again, if the fire had occurred at night then escapees would have had to negotiate a maze of tent pegs and ropes in the dark.

- The fire led to strict imposition of fire safety standards in all circuses in the US. It represented a landmark in US fire disasters.

- What should be taken as plausible fire scenarios?
At the Commissioner’s hearing it was claimed that over 8000 people were in the tent on the day of the fire.

The city fire marshal testified that no one from his fire dept inspected either the circus or its fire fighting equipment, and that had been the custom for years.

Existing statutes did not make it clear whose responsibility it was – the City or the State fire marshal. City ordinances required that either the police or firemen should be present at circuses and since the police were present it was deemed not necessary for firemen to attend.

Death awards were typically $6500 for children and the largest award of $100,000 was for a former dancer severely burnt.

The five circus owners received jail sentences of 6 months to 5 years but these were later reduced to one year so that the circus could continue in business. All the claimants’ awards had been paid by 1950.
The Commissioner told local inspectors to allow future events on the following basis: not more than one person per 5 sq ft in standing areas, not more than one person per 8 sq ft in fixed seating areas, not more than one person per 10 sq ft in loose seating areas, and there should be adequate widths of aisles and exits and short rows of seats.

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