Learning from the
Kiss Nightclub Fire
Karen Boyce
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Overview

• Kiss nightclub, Santa Maria (Rio Grande do Sul), Brazil, Sunday 27\textsuperscript{th} January 2013

• Blaze began at approx 02.30 local time during performance by Gurizada Fandangueira (country music band)

• Caused by pyrotechnics igniting flammable ceiling

• 242 deaths, 168 injuries
The Fire

- Band lit sputnik on stage which ignited flammable sound proofing foam on ceiling
- Flare was cheap ($1.25?) and can reach 4m (Brazilian Association of Pyrotechnics) - not to be used in closed environments
- Band originally claimed that they hadn’t used sputnik but rather fire caused by electrical short circuit – disproved
- Ignited flammable sound-proofing on ceiling
During the Fire

- 1000+ occupants
- Initially band were passed a fire extinguisher which didn’t work
- People (briefly) prevented from leaving because they hadn’t paid their bar tab (comanda)
- Fire department was close and arrived quickly (occupants using social media to inform) but already hampered by bodies blocking exit
- Partygoers helped firefighters pound windows and walls to free trapped - 90% died of asphyxiation
Area 1 (left)
Area 1 - stage
In total 16 people charged

April 2013 – two nightclub owners and two band members accused of “negligent homicide”

Others (including firemen) charged with obstructing course of justice - false information used by the club and approved by the fire department
Context

• Brazil population: 198 million

• Santa Maria in Rio Grande do Sul, southern state in Brazil (borders Uruquay and Argentina)

• State has population of 10.7 million

• Highest standard of living in Brazil
Brazilian System of Regulation

• In 1970’s fire in Sao Paolo (Joelma Building, 1974, 189 deaths, 320 injured) prompted safety regulations (prescriptive) that became national model BUT

• In reality each state (including Rio Grande do Sul) individually creates its own regulations

• Either can be used and different states have different guidance

• Often eg in Sao Paolo you can find 3 different stair sizing approaches (using Fire Safety Standard NBR9077, Sao Paolo’s own regulation or a ‘city hall building code’)
Brazilian System of Regulation

- Fire department are the controlling authority – they develop regulations and approve
- Calls for agreed national fire safety regulations but being resisted by fire departments of each state which each claim to have the best!
- Under the Ministry of Labour, there is Health and Safety Law which requires frequent checks (and issuing of certificates) but rarely enforced
History of the Kiss Nightclub – Occupancy changes

• Built in the 1950s, originally a warehouse
• In 2003 changed use to a small college
• In 2009 significant refurbishment to nightclub
The Fire Certificate

- first license for the club issued August 2009 after receipt of a fire safety strategy for the nightclub
- last inspection took place in August 2011 (expired)
- stated that the club had two emergency exits and had sufficient extinguishers, licensed for 691 people
Post Fire Certificate

- February 2012 – refurbishment of the stage, ticket office, built dressing room, mezzanine, and VIP area also with mezzanine
- November 2012, put in suspended ceiling (1.5 m below original) with flammable acoustic lining
- Demolished internal walls
- All without permission or without informing authorities
Active Systems
(Required v Reality)

- At minimum a manual detection and alarm system (it had none)
- Emergency lighting (had but didn’t work)
- 12 fire extinguishers (had 7 and at least one didn’t work)
- Did not require or have sprinklers or smoke control
Means of Escape
(Required v Reality)

- Occupancy classifications similar to purpose grouping but more specific – F6 club
- Fire certificate licensed for 691 (floor space factors for an F6 building would suggest 1230 (based on 615 m²)
- Estimates of numbers vary (range from 1000-1500) but, according to ex-employees, 1400 was commonplace
Means of Escape
Requirements v Reality

• Number of exits depends on occupancy and size of building (> or < 750 m$^2$), no requirements for remoteness – this building required 2 exits (it had 2 exits from space which merged at 1 final exit)

• Exit sizing based on unit width/100 people (5.5 mm/person) ie 3.8 m (plans suggest 2 x 1.8m (front entrance) but other sources suggest 2 x 0.8m and pictures?)

• Travel distance depends on 1 or more exits and sprinkler/no sprinkler) – in this case 40m (max travel distanced reported to be 32 m)
Entrance and Exit
Escape routes Area 2
Exit corridor with stairs and ‘foyer’ at exit
Rotas de saída do público

TRAJETO DAS PESSOAS

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Inicio do incêndio

Área VIP

Banheiro

Salida

Rua dos Andradas, 1925

Logo que perceberam o fogo e a fumaça, as pessoas que estavam perto do palco começaram a correr procurando a saída para a rua.
Quem estava na parte central da boate e na área VIP enfrentou, segundo testemunhas, a resistência de seguranças que num primeiro momento barraram as pessoas que não tinham a comanda paga.
Reported 180 bodies in toilets

Em meio ao tumulto e devido ao ambiente escuro, muitos foram parar nos banheiros numa tentativa de escapar pelas janelas, mas o revestimento da fachada impediu que elas fossem abertas.
Regulatory response

- State of Rio Grande do Sul published new guidance (December 2013) based on guidance already adopted by other states eg Sao Paolo
- Addresses use of fire retardant materials, the use of sprinklers and smoke control (check list)
- Groups calling for fire safety engineering but concerns over technical innovations
- Smoke control for pressurized stairs (NBR 14880: 2014) has just been published and it will be officially valid for use on 8th February 2014
Could these deaths have been avoided?

- Multiple death fires rarely just one reason or one person

- Fire safety depends on appropriate actions and decisions being made:
  - during the fire by occupants/staff and
  - (arguably more importantly) prior to the fire by design team, management and inspecting authorities
Not the first time......

• “The reason they died was the search for profit...” prosecutor Joel Dutra (Kiss)

• Station Nightclub, Rhode Island (2003):
  – Overcrowding
  – Flammable wall/ceiling coverings
  – Inadequate fire suppression devices
  – Improper use of pyrotechnics
  – Inadequate exits
Thankyou for Listening!
Incêndio

Sinalizador em local fechado

Extintor faltando
Um segurança e o vocalista da banda tentam usar um extintor que não funciona.

Tumulto
Pessoas começam a correr. Sem perceber de imediato o fogo, segurança impede a saída. Um ‘biombo’ travança a porta de entrada/saída e atrapalha a evacuação. Grades no lado externo foram outro obstáculo.

Fumaça e escuridão
Devido à fumaça e ao ambiente escuro, público tem dificuldade para localizar a saída e muitos correm para os banheiros, por onde não conseguem escapar.

Resgate
Sobreviventes tentam tirar vítimas do local e quebraram as paredes da fachada. No banheiro, havia centenas de pessoas atoxidadas.