

A GLOBAL SURVEY OF HOSPITALITY FIRES

Mitigating Them and Reacting to Them

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A GLOBAL SURVEY OF HOSPITALITY FIRES

“Innkeepers are held to the highest standard of care of all landlords...(travelers) have to put their safety in the hands of the innkeeper. Jurors can easily relate to this scenario, and the defense should expect that jurors will have little tolerance for crimes committed in hotels or motels.”

A Complete Guide to Premises Security Litigation

A. Kaminsky, 2001

A GLOBAL SURVEY OF HOSPITALITY FIRES

- Nature and Causes of Fire

- A. Fire is An exothermic process of rapid oxidation requiring fuel, oxygen and heat
- B. Fire can be caused by natural disaster, carelessness or an act of vandalism/terrorism

- Fire Induces Panic

- Annual Loss of Life and Property

- A. 0.8% of US fires start in hotels or motels
- B. According to NFPA (Flynn, 2010), from 2003 to 2007, hotel/motel fires accounted for:
 - 11 deaths
 - 151 injuries
 - \$63.3 million in property damage

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Annual Loss of Life and Property

- According to NFPA, there were 3,970 structure fires in US hotels/motels from 2003 to 2007
- 1 in 12 hospitality venues report a fire annually
- Leading causes (by number of fires):

Cooking	40%
Washer/dryer	10
HVAC	8
Trash	7
Smoking	6
Electrical	6
Intentional	5
Candle	3

- 11% of fires start in bedroom, but cause 70% of deaths, 36% of injuries
- When present, sprinkler systems are effective 91% of the time
- USFA National Master List of Fire Safe Hotels and Motels:

www.usfa.dhs.gov/hotel/

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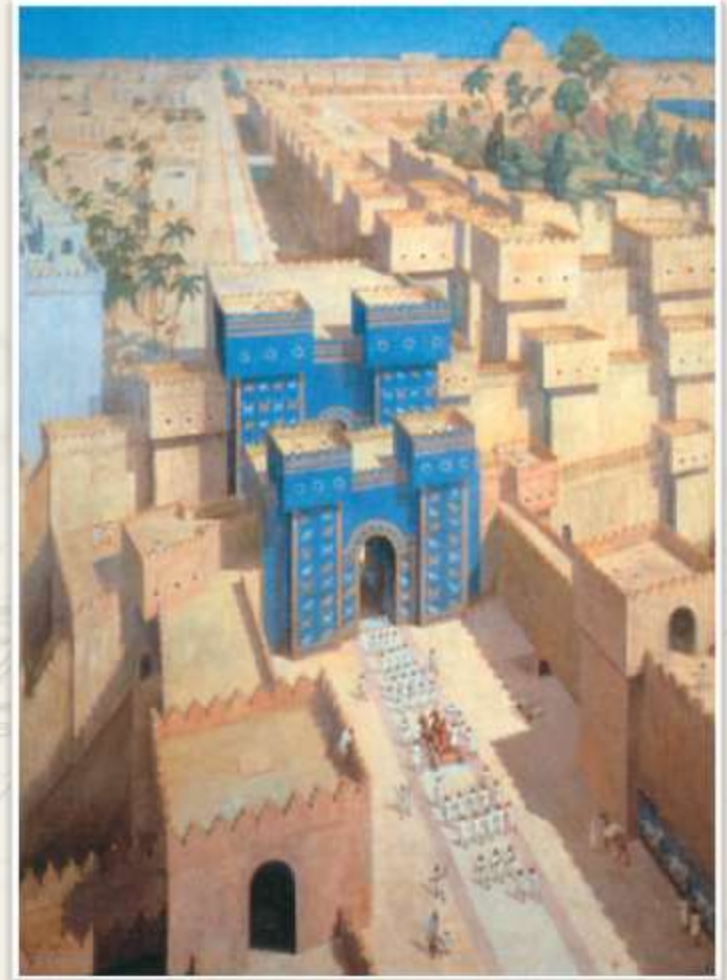
Code of Hammurabi:

Established between 1792 and 1750 BC in
Babylonia (now Iran)

“Eye for an eye” concept

Guilty subjected to the “Ordeal of the River”

In certain situations, accusers (plaintiffs) were
subjected to the “Ordeal of the River” to first determine
validity of charge



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Code of Hammurabi

228: If a builder build a house for a man and complete it, that man shall pay him two shekels of silver per sar of house as his wage.

229: If a builder has built a house for a man and his work is not strong, and if the house he has build falls in and kills the householder, that builder shall be slain.

230: If he child of the householder be killed, the child of the builder shall be slain.

231: If a slave of the householder be killed, he shall give slave for slave to the householder.

232: If goods have been destroyed, he shall replace all that has been destroyed.

Ordeal of the River:

If anyone bring an accusation against a man, and the accused go to the river and leap into the river, if he sink in the river his accuser shall take possession of his house. But if the river prove that the accused is not guilty, and he escaped unhurt, then he who had brought the accusation shall be put to death, while he who leaped into the river shall take possession of the house of his accuser.”

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Fire of Rome

Burned for 5 1/2 days in 64 AD

Nero rumored to have sung the “Sack of Ilium” and played a lyre in stage costume as Rome burned (Violin had not yet been invented)

According to the historian Tacitus, Nero rushed back to Rome to organize the relief effort, which he paid for personally. Nero opened his palaces as shelters, and arranged for food to be delivered to prevent starvation.

Following the fire, Nero created a new urban redevelopment plan, in which houses were required to be spaced out, built in brick, and be faced by porticos on wide roads.

Nero blamed Christians for the fire, and ordered them to be fed to dogs, crucified, or set on fire and used as lights.



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1666 Great Fire of London

Burned from September 2 to September 5

Consumed 13,200 homes, 87 parish churches, St. Paul's Cathedral and most of the official city buildings of London

Death toll listed at 6, since the deaths of the poor and middle-class were not recorded anywhere

Confession of Robert Hubert fueled speculation that the fire was started by the Catholic Church

Masterplans by Wren, Evelyn and others never implemented due to land interests of aristocracy; houses were rebuilt of brick and stone, and obstruction of paths to the river were forbidden



A GLOBAL SURVEY OF HOSPITALITY FIRES

Historic Evolution of Building and Related Codes in the United States

- 1648 Wood fireplace chimneys outlawed in New York
- 1766 Fire district created in NYC ; buildings were stone or brick and roofed with tile or slate
- 1780s Washington, Jefferson and others establish building limitations in District of Columbia; wood frame limited to 12' high, 328 sf
- 1853 Steam elevator displayed at World's Fair
- 1862 DC adopted building code
- 1871 Chicago Fire, most expensive of numerous fires that partially destroyed cities across the US throughout the 19th century
- *1905 National Board of Fire Underwriters publishes first model code after fire destroyed most of the city of Portland, Maine
- 1927 Pacific Coast Building Officials Conference (later ICBO) publishes the *Uniform Building Code*
- 1946 Southern Building Code Congress (SBCCI) publishes *Southern Standard Building Code*
- 1950 *Basic Building Code* published by Building Officials and Code Administrators (BOCA)
- 2000 International Building Code published by CABO, later to be called ICC

* still referenced in older HUD documents

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Current Configurations of Code Families

I-Codes (International Code Council)

International Building Code	IBC
International Energy Conservation Code	IECC
International Existing Building Code	IEBC
International Fire Code	IFC
International Fuel Gas Code	IFGC
International Mechanical Code	IMC
International Plumbing Code	IPC
International Private Sewage Disposal Code	IPSDC
International Property Maintenance Code	IPMC
International Residential Code	IRC
International Wildland-Urban Interface Code	IWUIC
International Zoning Code	IZC
International Performance Code for Buildings and Facilities	IPCBF

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Others:

NFPA (National Fire Protection Association)

NFPA 1

National Fire Prevention Code

NFPA 13

Sprinklers

NFPA 70

National Electrical Code

NFPA 72

Fire Alarms

NFPA 101

Life Safety Code

NFPA 5000

Building Construction and Safety Code

In Process:

Americans with Disabilities Act

“New” ADA (2010 vs. 1990)

Either version can be used during transition 2010-2012

Intl. Green Construction Code

IgCC

Intl. Spa and Pool Code

ISPC

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Americans With Disabilities Act (ADA)

ADA enacted in 1990, revised in 2010
(42USC § 12131, et seq.)

Retroactive

“Reasonable accommodation” vs.
“Undue hardship”

Allowed for limited tax credits for
accessibility features

Statute rather than code

Enforced by US Department of Justice except
in states with approved equivalent legislation

Americans with Disabilities Act Architectural
Guidelines (ADAAG)



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International Green Construction Code (IgCC) public discussion ongoing, scheduled to be ready for enactment locally in 2012

Overlay as opposed to stand-alone

Jurisdictions can exercise options to make code more/less stringent

International Spa and Pool Code (ISPC) out for public discussion

Entrapment avoidance:

Virginia Graeme Baker Act

Zackary Cohn Foundation (theZakfoundation.com)

Dual drains, suction line covers, and SVRS* systems

* Suction vacuum relief system- mechanical or electrical

Iroquois Theatre Fire

- December 30, 1903
- Chicago, Illinois
- Single deadliest fire in U.S. history
- At least 605 people died
- Opened in November 1903 after numerous delays due to labor unrest
- The theatre was billed as “absolutely fireproof”



Iroquois Theatre Fire

- A Chicago fire captain toured the theatre days prior to the opening and noted a lack of fire extinguishers, sprinklers, alarms, water connections and telephones
- He reported the deficiencies to his superiors and was told there was nothing that could be done
- The only firefighting equipment available was six canisters of Kilfyre, a dry chem extinguisher commonly used for chimney fires

Iroquois Theatre Fire

The Fire

- Occurred during the matinee performance of Mr. Bluebeard
- Standing room only crowd of 2,000 patrons
- Around 3:15 at the beginning of the 2nd act, a curtain was ignited when it came in contact with a light
- Stage hand attempted to extinguish the fire but it spread quickly to painted canvas scenery
- Fire doors could not be opened due to the bascule locks.
- Dead-end hallways
- Unfinished fire escapes
- Iron gates barred stairways

Iroquois Theatre Fire

The Aftermath

- Theatres eliminated standing room
- Building and fire codes were reformed
- All exits had to be clearly marked
- Exit doors had to be easily operable from the interior
- The development of panic bars
- Fire proof curtains to separate the audience from the stage
- All doors must open in the direction of egress



Cocoanut Grove Fire

- November 28, 1942
- Boston, MA
- Second worst single building fire in U.S. history
- 492 dead
- Club was originally a garage and warehouse complex outfitted with artificial palm trees, heavy draperies, satin canopies suspended from the ceiling and a roof that could be rolled back
- Estimated that 1,000 patrons crammed into a space rated for 460



1930'S COCOANUT GROVE INTERIOR

Cocoanut Grove Fire

The Fire

- Started at approximately 10:15 pm in a downstairs lounge
- Patrons saw fire erupt in artificial palms that created a canopy
- Within 5 minutes the entire club was engulfed
- Main exit was a revolving door that became jammed with bodies
- Side doors were bolted shut to prevent patrons from leaving without paying
- A plate glass window that could have been used as a means for escape was boarded over
- Other doors opened inward making them useless against the crush of people



Cocoanut Grove Fire

The Aftermath

- Owner, Barney Welansky was convicted of 19 counts of manslaughter
- Sentenced to 12 - 15 years in prison
- Served 4 years and was pardoned
- Died 9 weeks after his release
- In 1997 the case was reopened and it was determined that the fire was caused by a refrigerator leaking Methyl Chloride
- This led to a flash fire
- Methyl Chloride is no longer used in consumer products
- Laws were enacted in Massachusetts and other states banning flammable decorations and inward swinging fire doors
- Exit signs must be illuminated and visible
- Revolving doors must be flanked by outward swinging doors



Rhythm Night Club Fire

- April 23, 1940
- Natchez, Mississippi
- AKA – Natchez Dance Hall Holocaust
- 209 dead
- Steel clad wood framed structure that was once a church
- 770 people in attendance to see an orchestra from Chicago
- Decorative Spanish moss had been draped over the rafters
- To kill bugs, the moss was sprayed with Flit, a petroleum based insecticide
- Due to the dry conditions, the moss began to decompose and produce Methane gas



Rhythm Night Club Fire

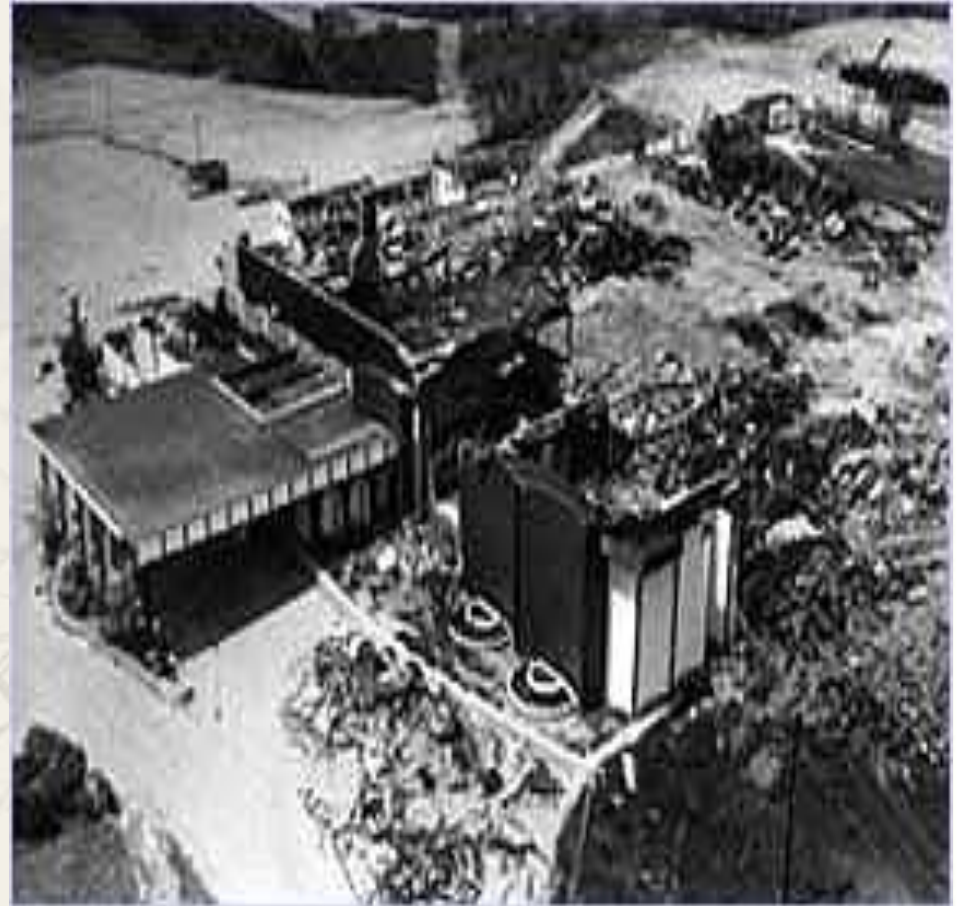
- Windows had been boarded up to prevent outsiders from viewing or listening to the music
- The rear door was padlocked and boarded
- Fire was believed to be accidental
- City passed new fire laws to outlaw overcrowding of buildings



Some 198 negroes were burned to death at Natchez, Miss., when flames racing through decorations of dry Spanish moss trapped them in a one-exit dance hall. Some victims are shown in the foreground and scores of others are piled up in the rear. Hundreds of dancers were in the hall when the fire flared suddenly.

Beverly Hills Supper Club Fire

- Saturday May 28, 1977
- South Gate, Kentucky
- 165 dead and over 200 injured
- Major attraction 6 miles outside of Cincinnati, Ohio
- Sprawling complex of function rooms and service areas connected by narrow corridors



Beverly Hills Supper Club Fire

- It is believed that 3,000 patrons and 182 employees were in the structure at the time of the fire
- A wedding reception in the Zebra Room had ended at 8:30
- Guests complained that the room was overheating but there was no smoke present



Beverly Hills Supper Club Fire

- The room was closed and not reopened until 8:56 when two waitresses saw dense smoke
- At 9:01 the fire department was notified and the first engine arrived at 9:05
- At 9:08, busboy Walter Bailey interrupted the show in the Cabaret Room where 1,300 patrons were located; he asked the patrons to exit using the doors to the right and left of the stage



Beverly Hills Supper Club Fire

- At 9:10 the fire burst into the Cabaret Room. Those that had not evacuated quickly panicked
- Many were found dead piled near the main entrance



Beverly Hills Supper Club Fire

The Conditions

- Overcrowding – Seating charts showed the Cabaret Room held 756 with a estimated 1,300 in the room on the night of the fire
- Inadequate Exits – With the capacity of 2,750 there should have been 28 exits, the club had 16, many of which were not marked or easily reached
- Faulty wiring–It was said to have been an electricians nightmare
- Lack of fire walls
- No Sprinkler system
- No Audible fire alarm
- First disaster case to sue as a class action

The Station Night Club Fire

- Thursday, February 23, 2003
- West Warwick, Rhode Island
- 100 dead
- The fire was caused by pyrotechnics igniting the sound insulating foam that had been applied to the walls and ceiling surrounding the stage



The Station Night Club Fire

- The club was fully engulfed in 5 minutes and 30 seconds
- The fire started when the band White Snake started their show by setting off 3 gerbs. Gerbs are devices that spray sparks approximately 15 feet
- The flames were 1st thought to be part of the show



The Station Night Club Fire

- 4 possible exits
- Most patrons headed to the main exit (where they entered)
- Ensuing stampede led to the main exit being blocked completely



Victims jam the main exit of The Station

The Station Night Club Fire

The Aftermath

- N.I.S.T. – National Institute of Standards and Technology investigated the fire using computer simulations and concluded that sprinklers would have contained the fire long enough for everyone to escape
- Michel Biechele, White Snakes tour manager, plead guilty to 100 counts of manslaughter. Sentenced to 15 years, 4 to serve and 11 suspended
- Club owners, Michael Derderian and Jeffery Derderian, plead no contest
- Jeffery Derderian was sentenced to 10 years (suspended)
- Michael Derderian was sentenced to 15 years, 4 to serve and 11 suspended

The Station Night Club Fire

The Aftermath

- Michael Derderian was involved with the purchase and installation of the foam sound proofing
- February 2008 – WPRI-TV reached an out of court settlement for 30 Million Dollars. A journalist (Michael Derderian) was doing a story on night club safety; it was said that the video journalist had been obstructing escape
- The Derderians were fined 1.07 million dollars for failing to carry workman's compensation insurance on their employees, 4 of whom died in the fire
- March 2008 – JBL reached an out of court settlement for 815K. They were accused of using flammable foam in their speakers

The Station Night Club Fire

The Aftermath

- Sealed Air Corporation, makers of the foam insulation agreed to pay 25 million dollars
- Anheuser – Busch has offered 5 million dollars
- State of Rhode Island and the town of West Warwick has agreed to pay 10 million dollars
- As of August 2008, a total of 175 million dollars has been offered to settle the numerous suits filed in this case



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Recent Fire Events Around the World

2011	Mayfair	London	Kitchen
2011	Dynasty Wanxin	Shenyang	Fireworks
2010	Willard Intercont.	Washington, DC	Electrical
2010	Intercontinental	Boston	Electrical
2010	The London	New York City	Candle
2009	Mandarin Oriental	Beijing	Fireworks
2009	Terranea	Palos Verdes	Laundry Room
2008	Monte Carlo	Las Vegas	Construction Workers

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Preventing/Mitigating the Possibility of Hotel Fires

1. Meeting Code vs. Meeting the Standard of Care
 - a. New Construction
 - b. Existing Facilities
2. Computerized Fire/Smoke Control Modeling
3. Risk Analysis/Assessment
4. Training
5. External Threats

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Reaction to Fire

1. Evacuation Plan
2. First Response
3. Systems Responses
4. Reset Procedures



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Fire Investigation

Size and complexity of the incident

Nature and extent of the damage

Security of the scene

Organizing the investigation

Specialized Personnel

- a. Mechanical Engineer
- b. Electrical Engineer
- c. Fire Protection Engineer
- d. Architect
- e. Attorney



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Case Study: Birj Khalifa (Armani Hotel)
Dubai, UAE

1. Structure
2. MEP Systems
3. BMS
4. Crisis Response Plans
 - a. 50 responses procedures
 - b. Four types- building system
 - human
 - terrorism
 - weather



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Questions?
Thanks for your time and attention.

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