



UNIVERSITY OF
MARYLAND
Department of Fire Protection Engineering




Transition into Practice – Why does all of this matter?

A. JAMES CLARK SCHOOL of ENGINEERING • UNIVERSITY of MARYLAND




Improving Building Codes




- NFPA Committee on Safety to Life (now NFPA 101) was created
- Requirements for: emergency lighting, exit signage, capacity signage, outward swinging doors, swinging doors on either side of revolving doors, and panic hardware (1942)
- Elimination of 'places of eating and drinking' as an exception to places of assembly (1942)
- Retroactive alarm and sprinkler requirements (1977)

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Improving Building Codes, cont.



- Prohibiting the construction of new wooden grandstands – UK (1985)
- Smoking banned from all underground stations (including escalators); wooden escalators replaced with steel escalators – UK (1987)
- Require fire service elevator (> 120 ft); permit use of occupant elevators in place of third stair requirement (>420 ft) (2001)
- Sprinkler all new nightclubs and retrofit existing nightclubs with greater than 100 persons (2003)

Improving Procedures/Training


- Design more effective/efficient procedures – e.g., what is possible, using guides or wardens
- Familiarize occupants with the procedures – e.g., training, drills
- Guide occupants to follow the procedures
 - The use of well-trained staff/occupants to guide
 - Fire alarm systems – the addition of voice communication
 - Information – people need and seek information


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Performance-based Analysis


- Assessment of a new building design; change of occupancy/design


**Required Safe
Escape Time
(RSET)**



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**Available Safe
Escape Time
(ASET)**




Safe


Performance-based Analysis, cont.

❖ **Required safe egress time**

➤ **Scenarios**

- No of people
- Location of people
- Attributes
- Activities
- Personnel
- etc.

➤ **NOT a well-established process**




• **Available safe egress time**

– **Scenarios**


- HRR (kW)
- Location
- Open/closed doors
- Technical systems
- Rescue services
- etc

– **Accepted process**

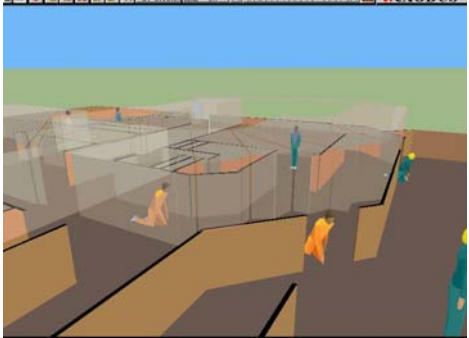


Improving Safety Assessment Tools

- Improving Safety Assessment Tools (calculations or computer models)
 - Better assess building or procedural design
 - Accurate calculations of how fast people will take to evacuate a building
 - What they will do?
 - How long will it take them to do it?





Behavior in Evacuation Modeling



Exodus, University of Greenwich

Summary

- An understanding of human behavior can help to improve life safety in fire events through...
 - Improvements to building codes/standards
 - Development of more informed procedures/training
 - Creation of safety assessment tools founded in a true understanding of human behavior in fire



Discussion Topic

- Describe one incident when you experienced a fire alarm, voice message, or equivalent fire cue (i.e., seeing smoke in a building). Discuss what cues/information you received, what actions you took and **why you took them** – based upon what you now understand about the process of decision-making and human behavior during fires.
- **The incident you choose** could be anything from a false alarm, to a fire drill, to an actual building fire.
- If you have not experienced anything like this, produce a hypothetical scenario that is likely to occur. *Note – it is unlikely that you would write about a panic scenario.*

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