Ignatius Kapałczyński

- Little Bit Andy Rooney
  - "Did you ever wonder . . . . ?"
- Little Bit Paul Harvey
  - "The rest of the story . . . ."

Fairness – State the facts with documentation

What Is A Sprinkler System?

- System of pipes
- Water
- Heat activated devices

Hollywood

[redacted]

Fresno PSA

[redacted]

What Does It Do?

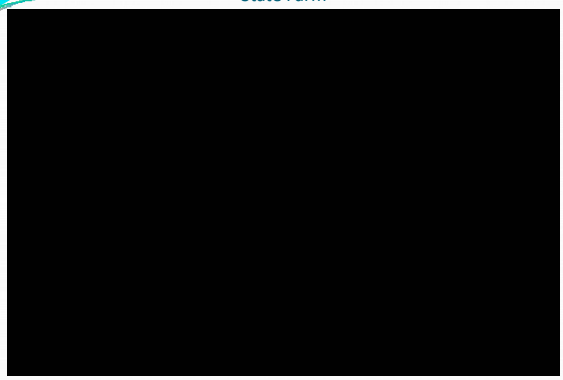
- Heat Detection System
- Fire Control System
- Life Safety System

Fire SUV

How Does It Work?

- Heat activated link fuses
- Spray of water cools, coats, and reduces reaction

State Farm



Fire

- Why is it good?
  - Cook, heat, light
- When is it bad?
  - Uncontrolled, unexpected
- How is it bad?
  - Burns, asphyxiation, poisoning
- Where is it bad?
  - In occupied spaces

Reality

- 32 fire deaths last year
- 10 so far this year
- Children & elderly
- 70 – 80% residential

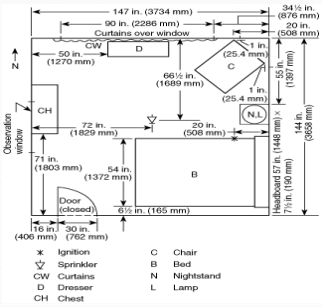
Where?

- Most in 1 & 2 family dwellings
- Most other occupancies sprinklered already

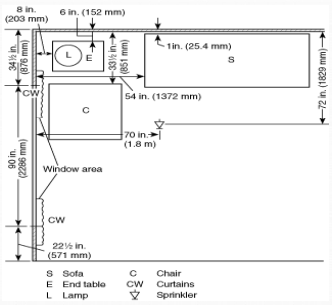
13D Sprinkler Systems

- 1 & 2 Family Dwellings
- Where people live
- Domestic Water
- Simple installation
- Inexpensive
- Quick Response
- No maintenance

Test Bedroom



Test Living Room



Area of Origin (Based on 6,066 incidents)

- Living room 41%
- Bedroom 27%
- Kitchen 15%
- Storage area 4%
- Heating equipment room 3%
- Structural area 2%
- Other areas 8%

Form of Materials Ignited

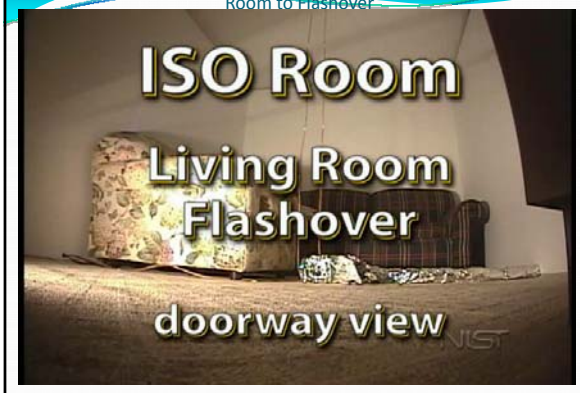
Furniture	27%
Bedding	18%
Combustible liquid or gas	13%
Interior finish	9%
Structural member	9%
Waste, rubbish	4%
Clothing (on a person)	3%
Cooking materials	3%
Electrical insulation	2%
Curtains, draperies	2%
Other	10%

Form of Heat Ignition

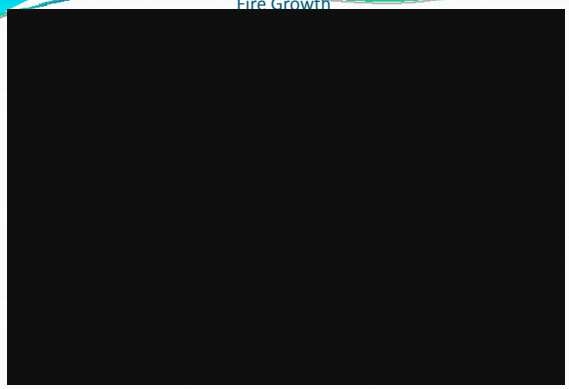
- Smoking materials 36%
- Heat from fuel-fire or powered object 25%
- Heat from open flame (incl match) 15%
- Heat from elect arcing or overload 14%
- Hot objects, incl operating elect equip 7%
- Other 3%

Cooking Fire

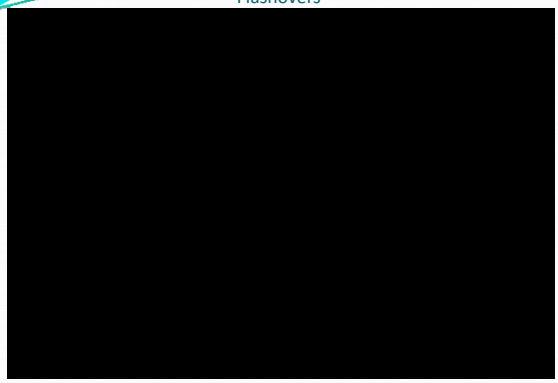
Room to Flashover



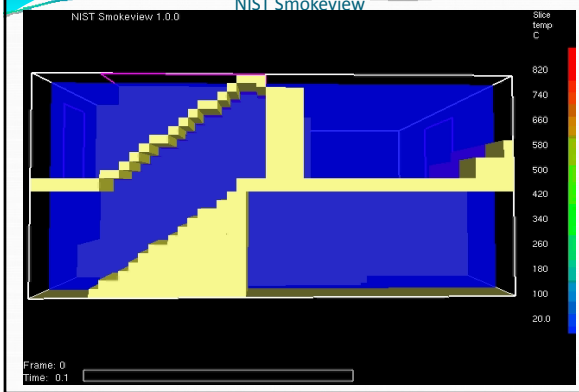
Fire Growth



Flashovers



NIST Smokeview



IRC 2009

- National standard of practice
- Building & fire code enforcement officials

Home Building

- New light weight building materials
- Low mass
- Encapsulated foams
- Laminates
- Composites
- Kindling

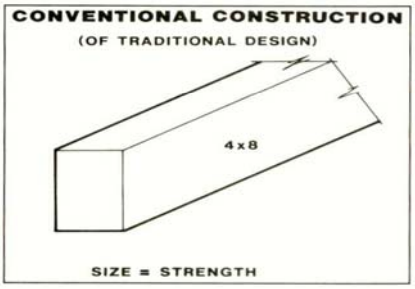
Low Mass Composites

- Less fire resistance
- Earlier failure
- Greater surface to mass ratio

LIGHTWEIGHT CONSTRUCTION

- **CONVENTIONAL CONSTRUCTION:**
  Conventional construction utilizes structural members that depend on size for strength. The greater the span for a structural member the larger it has to be to support a given load.

LIGHTWEIGHT CONSTRUCTION



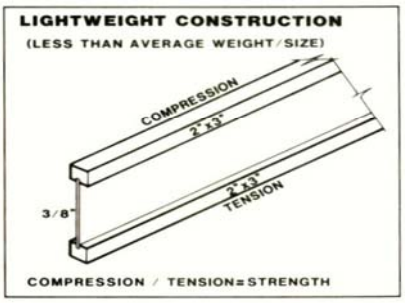
LIGHTWEIGHT CONSTRUCTION

- **DEFINITION:**

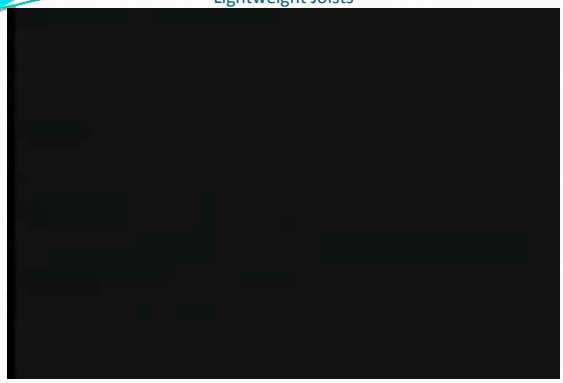
  Lightweight construction does not derive its strength from size. Is obtained from multiple members that are in compression and tension.

  Additionally, the strength of the individual structural member is dependent on the sum total of the other members; thus, if one member fails, other members may fail.

LIGHTWEIGHT CONSTRUCTION



Lightweight Joists



Composite Beams

LIGHTWEIGHT CONSTRUCTION

- **STRUCTURAL MEMBERS USED IN LIGHTWEIGHT CONSTRUCTION:**

— Lightweight Beams
— Wood Trusses
— Metal Trusses
— Flooring
— Other

LIGHTWEIGHT CONSTRUCTION

LIGHTWEIGHT CONSTRUCTION

LIGHTWEIGHT CONSTRUCTION

LIGHTWEIGHT CONSTRUCTION

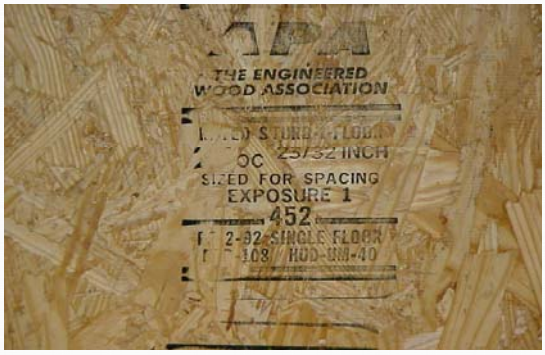
LIGHTWEIGHT CONSTRUCTION

LIGHTWEIGHT CONSTRUCTION

Low Mass
High Surface/Mass Ratio

LIGHTWEIGHT CONSTRUCTION

LIGHTWEIGHT CONSTRUCTION



LIGHTWEIGHT CONSTRUCTION

Combustible Contents

- Trims and finishes
- Materials
- Plastics
- BTUs
- Hotter, faster fires

Furnishings

- Cotton batting
- Foamed plastics

Furnishings

Underwriters Laboratories

In November 2009, Underwriters Laboratories conducted a side by side comparison of two simulated living room fires. The purpose was to gain knowledge on the difference between modern and legacy furnishings. The rooms measured 12 ft by 12 ft with an 8ft ceiling and had an 8 ft wide by 7 ft tall opening on the front wall. Both rooms contained similar amounts of like furnishings.

Both rooms were ignited by placing a lit stick candle on the right side of the sofa. The fires were allowed to grow until flashover.

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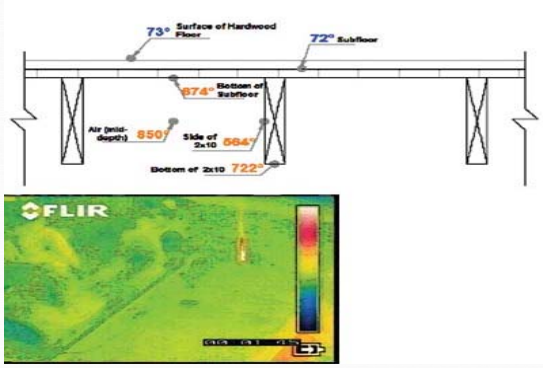
Energy Efficiency

- Insulation
- Windows
- Detection time delay
- Backdrafts



Lightweight Quad

Backdraft

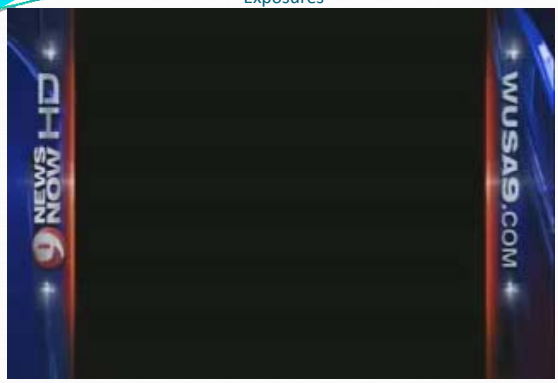
Polyisocyanurate

Exposures

- Lot lines
- Clearances and spacing

Target Wall

Exposures



Exposures – Summerlake (Use File)

Costs have been reduced but prices remain

- Result – more profits?

Compensations?

- For more rapid fires
- For earlier collapse
- For exposures
- For fire loading
- For reduced ways out
- For detection that has issues
- For tighter buildings

How Can Anyone Say That?

- REQUIRING SPRINKLERS IN NEW HOMES

Fire Marshals, Builders at Odds Over Bill

- By DANIELA ALTIMARI
- altimari@courant.com
- HARTFORD- A bill that would mandate sprinklers in all new homes won the praise of fire marshals but the disapproval of building officials at a public hearing Thursday.
- Fire marshals from several communities who came to the state Capitol complex Thursday said the measure would save untold lives.
- Officials' with the Home Builders Association of Connecticut, however, told the legislature's public safety committee that the requirement would add significant costs without reducing the number of fire deaths.
- New homes are already fairly fire-safe, said Bob Fusari, Sr., past chairman and president of the home builders group. Most have fire-stopping materials, upgraded electrical systems, hard-wired smoke detectors, and better escape routes, he said.
- Fatal fires, Fusari added, are far more likely to occur in homes built before 1985. "People are dying in the older homes yet we're putting sprinklers in new homes, "he told the committee at a public hearing.
- The International Residential Code, a comprehensive set of requirements for home building, has embraced the sprinkler mandate for all homes built after 2013.
- Only two states, California and Pennsylvania, currently have a statewide mandate that all new residential homes come equipped with a sprinkler system. Connecticut requires sprinklers in nursing homes, schools and buildings taller than four stories, among other structures, but not in one- and two-family homes, as this bill would dictate.
- The home builders association says consumers should have a choice whether to install a sprinkler system, which the group estimates would add $10,000to the cost of a 2,400-square-foothome.
- Fire safety advocates dismiss that argument, saying no one would leave proven lifesaving devices such as smoke detectors and seat belts to "personal choice."Cost is often used to fight improvements that wind up preventing countless deaths, but homeowners with sprinkler systems would benefit from certain financial incentives as well, such as reduced insurance premiums, they say.
- Old Saybrook Fire Marshal Donn V. Dobson noted that few home builders flinch at the cost of adding granite to a kitchen, or of other bells and whistles in new construction. And many of the cost arguments used against sprinklers were also raised in 1978, when battery-operated smoke detectors were first mandated in new construction, he said.
- "Everybody said smoke detectors were going to break the bank," added Kevin J. Kowalski, Simsbury's fire marshal.
- "Sprinklers have been proven to save lives and they're not as costly as they say they are."

People Are Dying in Older Homes?

- Records
  - Fire Department
  - NFIRS
  - Not recorded

Better Escape Routes?

- Single Exits
- Windows?

Occupied vs Unoccupied?

- Three Leading Causes
  - Men, women, children
- Activities
  - Cooking
  - Smoking
  - Appliances

Escape Time?

- Detectors
  - Time lag
  - Effectiveness
  - Fire spread

Collapses?

Occonomowoc Collapse

Smoke Alarms & Children

New Homes Safer Than Old Homes?

- Show the facts & statistics

Won't Reduce Fire Deaths?

- Not in non sprinklered buildings
- Completely in sprinklered buildings

Firestopping Materials?

- No sheathing over structural supports required

Upgraded Electrical Systems?

- Electrical systems don't cause fires
- Misuse does

Cost?

- Where do the get these figures?
  - $10,000 for 2400 square foot home = $4.17
  - $1.61 per square foot
- High quote example
- Profit?
- New technology
- Insurance 10% reduction
- Amortization

Comparable Options?

- Kitchen finishes
- Bathrooms
- Appliances
- Carpeting

Water Purveyors?

- Stand by fees
- Tanks & pumps

Licenses?

- Sprinkler
  - 1700 licensed fitters in CT
- Plumbers
- None (Homeowners?)

Personal Choice / Options?

- Must be present to choose
  - Seatbelts
  - Electricity
  - Plumbing
  - Cell phones
  - Factory installed options – just add water

Liability?

- Deviation from consensus standard of care
- No documented alternatives
- Willful negligence

Research

- NIST
- NFPA
- 30 years of facts and statistics vs SOS
- Over 900 fatalities (30 years)

Documentation

- Bibliography
- Factually based assertions
- Reproduceable methodology

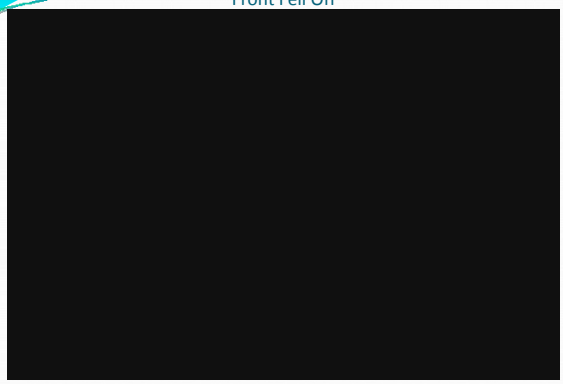
Plumbers Choice

- Multipurpose systems

Austin Habitat Experience

Orange County

Demonstrations

- Riser Manifold
- Sprinklers
- Burn Room
- 13D Multi-purpose system
- Fire Alarm Panels
- AFSA Trailer

Front Fell Off