



Earthquake Safety Fair Fire Safety Education in Multi- Unit Residential Buildings

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Fire Safety Workshop Agenda

What you should know about:

- Residential Fires
- General Statistics
- Housing Stock Characteristics & Vulnerabilities
- Apartment Building Fire Safety Inspections
 - Fire Detection, Suppression, Egress, & Maintenance
- Fire Prevention related to
 - Apartment Units
 - Common Areas
 - Adjacent Properties

Roles of Departments

- **Fire Department**
 - SF Fire Code

- **Department of Building Inspection**
 - SF Housing Code

Residential Fires Apartment Building General Statistics



- 98,000 structural fires caused:
 - 325 civilian deaths
 - 3900 civilian injuries
 - \$1.6 billion in property damage (2012 dollars)
 - <https://www.youtube.com/watch?v=piofZLySsNc>

Source: NFPA 2013 US data

Residential Fires Apartment Building General Statistics



- 143,500 structural fires caused:
 - 1025 civilian deaths
 - 3600 civilian injuries
 - \$1.117 billion in property damage (2012 dollars)

Source: NFPA 1980 data for US

Residential Fires General Statistics

US Home Structures

1980:

- 5200 civilian deaths
- 19,700 civilian injuries

2013:

- 2755 civilian deaths
- 12,200 civilian injuries

- 47% Reduction in civilian deaths
- 38% Reduction in civilian injuries

Residential Fires – Related Deaths



Leading Causes

- | | |
|--------------|-----|
| ■ Smoking | 32% |
| ■ Heating | 18% |
| ■ Cooking | 12% |
| ■ Electrical | 12% |

Residential Fires General Statistics

- Three out of five home fire deaths resulted from fires in properties without working smoke alarms.
- In one-quarter of these fatal fires, alarms were present, but the devices did NOT work.

Source: NFPA data Mar 2014
(Marty Ahrens)













Residential Fires Housing Stock Characteristics

- **380,000 Residential Units in SF**
 - 50% built prior to 1940
 - 60% are 3 units or more
 - 20,000 apartment buildings
- **Most Prevalent Construction Type**
 - Non-rated Wood Frame Construction



Residential Fires Housing Stock Characteristics

Non-Rated Wood Frame Construction

- **Potential Issues In the Event of a Fire**
 - **Burns through construction materials faster**
 - Rapid fire extension in void spaces
 - Loss of structural strength
 - Adds fuel to the combustion
 - **Older buildings can have hidden deterioration**
 - Electrical systems approaching end of life cycle
 - **Nominal Fire Suppression Requirements**

Residential Fires SF Housing Stock Vulnerabilities

- **Vulnerable Areas in the Event of a Fire**
 - **High Risk Activities, i.e. smoking, candles etc.**
 - **Unattended/Unauthorized cooking appliances**
 - **Storage Areas w/o Sprinklers**
 - **Garbage Areas/chutes w/o Sprinklers**
 - **Egress Obstructions**
 - **Light Wells with garbage/debris**
 - **Roof Areas with debris/dangerous wiring**
 - **Inoperative/ encumbered fire escapes**
 - **Defective/unauthorized wiring**



Inspections

- Early Detection in Apartment Buildings

Fire Detection in Apartment Buildings

- Smoke Alarms
- Central Alarms Systems & Control Panel
 - Buildings of 5 or more units & 3 or more stories
 - Alarms, Pull Stations, smoke detectors, audible alarms
 - Annual UL Certification for Fire Alarm Control Panel (FACP)



Smoke Alarms Save Lives!



- Over 6000 deaths occur in house fires each year.
- Most people die from the smoke and toxic gases rather than the fire itself.
- 77% of all fire fatalities in 2005 were in residences.

Carbon Monoxide (CO) Alarm

- Are required in all residences in California
- Carbon monoxide is an odorless, but deadly gas that is the result of the burning of fossil-fuels from devices like furnaces, barbecue grills, fireplaces, and combustion engines (vehicles).



Combination Smoke and CO Alarms

- A better solution: combination Smoke and CO Alarm with 10-year batteries.
- The best solution: “Hard-wired” (connected to an electrical circuit) combo smoke and CO alarms with battery back-up



How Many Smoke and Carbon Monoxide Alarms Should I Have In my Home?



- There should be at least one on every level of your home, and one in every sleeping area.

Maintenance of Smoke Alarms

- REPLACE smoke alarms every TEN YEARS !!
- Test Monthly
- Change your battery annually IF you have a “regular” battery.



Inspections Fire Suppression in Apartment Buildings

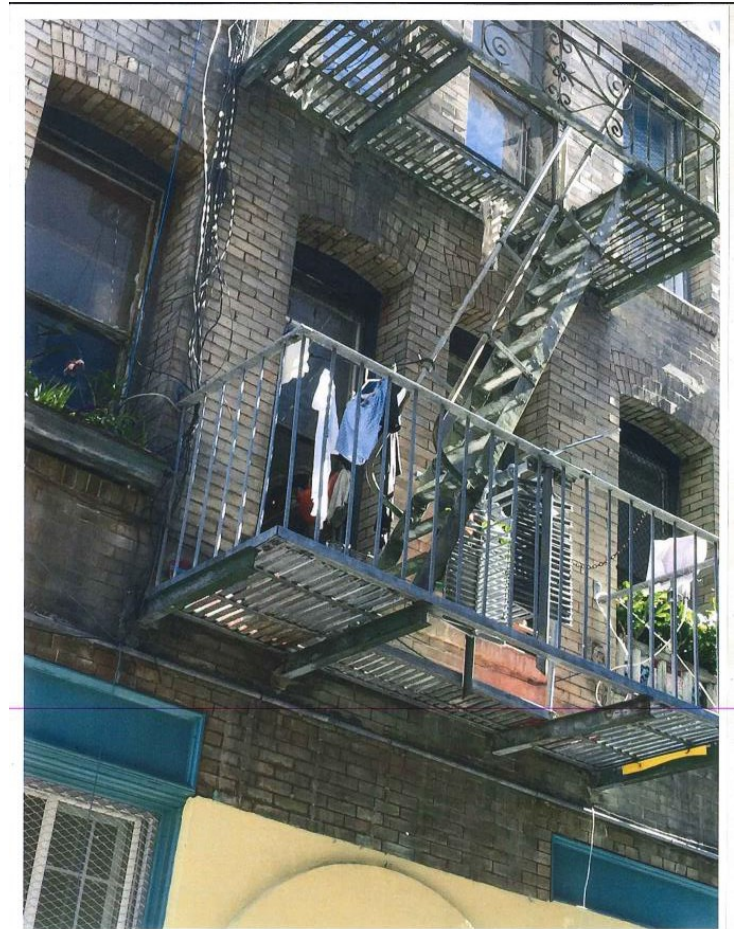
- **Nominal Fire Suppression in older buildings**
- **Fire Extinguishers:**
 - Proper Type
 - Annual Certification/Tag
- **Sprinkler Systems:**
 - Sprinkler maintenance
 - Proper sprinkler head ceiling clearance
 - Sprinklers required in:
 - garbage rooms/chutes & storage rooms/areas
 - Some dead-end corridors over twenty feet
 - Laundry chutes and linen rooms



Inspections Egress in Apartment Buildings

Keep second means of egress clear for escape

- Doors and windows to fire escapes are operable
- No storage permitted in hallways
- Fire Escapes unencumbered, regularly serviced, and fully operational
- No double cylinder locks on exit doors
- No security bars on exit doors without a manual release
- Maintain proper exit signage



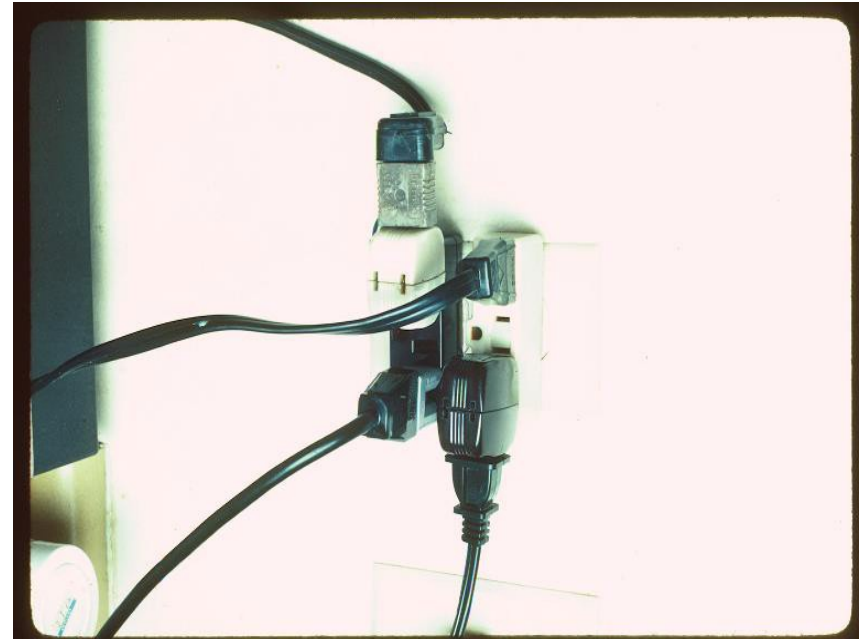
Inspections Maintenance

Maintenance in Apartment Buildings

- Observe proper occupancy loads
- Do not permit dangerous flammable storage
- Maintain Roofs
 - Do not add fire load
 - Do not install roof decks without proper permit
 - Remove wiring or other obstructions

Inspections Maintenance

- **Electrical Wiring**
 - Properly maintain & install with permit
 - Repair damaged or frayed wiring
 - Warning signs: sparking, circuit breakers tripping frequently, electrical elements warm to the touch



Inspections Maintenance

Proper Maintenance in Apartment Buildings

Do Not:

- Change occupancies without permit
- Install gas appliances without permit
- Use unauthorized cooking appliances
- Place combustibles near a heat source
- Use unauthorized heating sources

Prevention

Within your apartment unit:

- **Do report hazards to the landlord promptly**

Do not:

- Leave food on stove or in oven unattended
- Have burning candles or cigarettes unattended
- Overload extension cords or outlets
- Disconnect smoke alarms

Prevention

Within common areas:

- Have periodic evacuation drills
- Maintain clear view of building numbers
- Landlords are to maintain fire safety items
- Building Occupants should have an escape plan
- Tenants should report hazards to the landlord promptly
- If no response, report the conditions to DBI or SFFD
 - This can be done anonymously

Prevention

Adjacent Properties:

- **Plan Ahead: remember that fires can spread to adjacent properties -.**
- **Be aware of adjacent light wells, stairway systems and egress when planning your escape**
- **Report hazards to the landlord promptly**
 - **If no response report the conditions to DBI or SFFD**
 - **This can be done anonymously**

When you have an emergency always provide:

- Your name
- Your emergency
- The exact address
- A phone number where you can be reached



Plan Your Escape



- Have an escape plan that includes two routes out of each room
- Never open doors that are hot to the touch
- Escape first, then notify the Fire Department



Designate a Meeting Place



If you can't escape ...

- Have a telephone in your bedroom, (landline or mobile)
- Wet towels under the door
- Signal out the window



Contact Us

- Fernando Juarez

Fire Department

Bureau of Fire Prevention

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