

APPENDIX VI

**E. FIRE AND LIFE SAFETY TRAINING MATERIALS
FOR
COLLEGE & UNIVERSITY EMPLOYEES**



Course Objectives

- To have a fire safe environment with understanding of fire codes
- Fire safety program and the effective application
- Effective application to identify fire hazards and provide prevention programs
- Development of effective emergency evacuation plans



Fire Protection

- Fire protection is a system designed to provide the fire suppression component
- Protection for residential settings and public facilities



Fire Prevention

- Work towards a goal of reducing losses by fire

Quality Programs:

- * Knowledge
- * Competence
- * Fire Plan
- * Facilities



Fire Safety Is

- NFPA (National Fire Protection Association) defines a “fire safety program” as the science of reducing loss of life & property due to fire; by the utilization of “fire prevention” & “fire extinguishment”.



Fire Safety Programs

- A designed program that gives the requirements of the code and obligation of the building owner, and the insurance underwriter



Merit Plan

- Policies
- Implementation
- Education
- Evaluation
- Enforcement



The Three Big E's for Fire Safety

- **E**ducate
- **E**ngineer
- **E**nforce



Why the Program

- Building Code
- Fire
- Owners obligation, responsibilities
- OSHA Reg.



Fire Code Mandates

- Code identify where the owner has responsibilities
- Inspection, maintenance, testing & emergency planning



Maintenance Reference to Inspections and Testing

- Testing of smoke alarm & heats
- Maintain sprinkler and shutdown
- Maintain fire doors and inspection
- Fire dampers
- Maintain HVAC shutdown and annual inspection



Emergency Planning

- Education of staff
- Provide keys
- Fire safe plan
- Sound the alarm
- Call fire department
- ADA safe place
- Fire Drills



Heating Appliances

- Hot water heaters, boilers, furnaces
- Hazards associated with:
 - Pipes, flues, chimneys and fuel storage
- Fireplaces need cleaning/special care
- Requirements of code



Prevention for Cooking Equipment

- NFPA 96 Standard
- Inspect & test all suppression equipment
- Provide fire safety plan



Cooking Equipment

- Found in most buildings
- Hazard of hot grease, heating equipment
- If installed according to standard or code, hazard can be eliminated



Vacant & Historical Bldgs.

- Problems with vagrants and vandals
- Public law may require removal
- Buildings are high fire risk
- Historical buildings are covered in code



Combustible Waste

- Adds to fire load
- Code regulated proper storage
- Never store in exit corridors, service rooms or attics



Other Hazards

- Outdoor burning covered by codes
- Smoking hazards
 - Smoking policy with enforcement
- Holiday lighting and trees



Hazard Mitigation

- Eliminate
- Minimize
- Protect

Hazards have remedial actions or measures, assessments and follow-up

- Approved trades person
- Rated rooms for service rooms and incinerators
- Storage not permitted in service room
- Fire protection per code



Portable Fire Extinguishers

Basic Principles

- Do not use if fire is too large
- Fire gives off toxic gases, stay low
- Use extreme caution if electricity is involved
- Keep an escape route
- Never turn away from fire, back out



Chemistry of Fire

- Three elements must be presented for a fire to occur:
Fuel, Heat & Oxygen
- Three (3) sided fire triangle
- Four sided tetrahedron
- Too rich, too lean, no fire
- Remove any element, no fire
- Vapors burn (physical state)



Building Construction

- How will a building or assembly react under fire conditions
- Need to understand terms; closure, fire compartment, fire wall, fire protection rating, fire separation, labeled assembly



Occupancy Classifications

- Assembly
- Educational
- Health care
- Residential
- Business
- Mercantile
- Industrial



Class of Fires

- Class A: Ordinary combustible material
Wood, paper, plastic, rubber & textiles
- Class B: Flammable & combustible liquids
Gas, fuel oil, kerosene & tar
- Class C: Involve energized electrical equipment
- Class D: Combustible metal-produce O₂
Magnesium, titanium, zirconium



Fire Alarm Systems

- Fire alarm & detection systems will:
Provide safety for building occupants and reduce property damage
- Location and placement important
- May have to transmit to fire dept.
- Must be tested and maintained to standard (NFPA 72)



Fire Suppression Systems

Buildings & facilities will have emergency response needs:

- Hydrants & access roads (fire lanes)
- Fire department connections at main entrance
- Lock boxes and keys
- Floor plans
- High buildings require elevator keys (fire service)
- Equipment tags



Human Behavior

Obstacles

- Perception of expensive start-up costs
- Failure to see cost benefits
- Perception plan does not fit long term goals
- Plan must address human behavior
- Reduction of human error
- Most fires are preventable
- Human intervention will reduce money loss



Alarm Requirements

First Determine:

- Existing or new building
- Building classification
- Building height
- Number of occupants
- Staff ratio



Safety Audits

- Identify immediate and long term hazards
- Identify cost saving strategies
- Establish strong base from which a comprehensive program can develop
- Identify strengths & areas for improvement
- Provide an impetus for stalled programs
- Raise profile of safety issues – staff & management & work force
- Evaluation instrument to direct the control process toward a workable solution
- Identify fire risk, establish priority list
- Fire loss function has two (2) main areas
Prevention & Control



Fire Loss Control Program

- Prevention will have to cost, also benefits
- Delinquent owners may face fines, have to answer to why fire deaths or injuries, damages to neighboring property – high legal costs
- May decrease insurance costs ,
- Progressive companies are trend setters
- Fire prevention is mostly “common sense”



Owner Obligations - 1

1. **Fire Safety Plan**
 - Public assembly, healthcare, high risk
 - Fire system required in all buildings
 - Construction sites
 - Indoor storage areas
 - Flammable liquids storage and handling
 - Hazardous materials process and operation

Four Major Categories:

- * Maintenance
- * Inspections
- * Testing
- * Fire Safety Plan



Owner Obligations - 2

2. **Seven (7) Step Fire Safety Plan**
 - In case of fire what emergency procedures should be followed
 - Sound an alarm
 - Notify fire department
 - Instructing occupants on procedures
 - Evacuation of disabled occupants
 - Confining, controlling & extinguishment of fire
 - Fire safety organizational duties of staff
 - Train staff & occupants on fire safety responsibilities
 - Produce diagrams which show type, location & operation of fire emergency systems
 - Fire drills for occupants
 - Fire hazard controls
 - Inspection, test & maintenance



Owner Obligations - 3

3. **Special Conditions for a Fire Safety Plan**
 - Prior to appointment staff must be trained
 - Fire Chief to review firefighting procedures with owner
 - Staff trained in evacuation
 - Copy of plan given to staff



Owner Obligations - 4

4. **High Rise Buildings – Fire Safety Plan**
 - Voice communication system with staff trained how to use it properly
 - Elevator procedures
 - Prior to fire department arrival action plan on smoke controls
 - Review access into & within the building with the fire department



Owner Obligation - 5

5. **Maintenance - Fire Safety Plan**
 - Copy of the plan left in building for review
 - Emergency systems records in control center of high rise building which includes operating instructions
 - Plan needs to be reviewed annually or after major renovations



Owner Obligations - 6

6. Posting of Fire Safety Plan
 - One (1) copy per floor area
 - Posting of plans inside hotel/motel rooms
 - If local alarm only, instructions stating to contact the fire department including the number



Owner Obligations - 9

9. Fire Drill Frequency
 - Yearly for staff
 - Monthly for daycare and healthcare
 - Three (3) times a year for schools (total of 6)
 - Semi-annually in high rise buildings
 - Maintaining records is responsibility of owner



Owner Obligations - 7

7. Fire Alarm Shutdowns
 - If any part of fire detection is out of service notify
 - Fire Department
 - Provide fire watch



Owner Obligation - 10

10. Fire Safety Plan
 - Remain in operating condition
 - Inspect, test & maintain with approved & applicable standards
 - Notify fire department when system is out of service
 - Notify occupants of repairs
 - Use approved records, forms & maintenance people



Owner Obligations - 8

8. Fire Drill Procedures
 - Work with fire department
 - Understand type of building & fire hazards
 - Consider safety features of building



Management Plan

- Up to date training for staff
- Enhancements for productivity
 - Computers, Web Pages, etc.
- Innovative ideas
 - Benchmarking, Networking, involving staff
- Human presence must be high priority
- Progressive ideas
 - Video training, computer training
- Training



Emergency Planning

Preparedness

- Plan must be self-running for 72 hours without outside help
- Plan for the worst case scenarios
- The process is always on going
- Training, plan exercises, evaluation is key

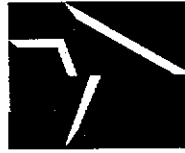
Definition of Disaster = *"An event which exceeds the capacity of the resources of the effected area to respond adequately in order to save lives, preserve property, maintain ecological, economical & political viability of the impacted area"*



Components for Preparedness Plan

Components

- Planning committee
- Hazard & risk analysis
 - Fire staff, Specialists, Insurance people, etc.
- Mitigation
 - Intervene to lessen severity of incident
 - Use sub-committees
- Emergency Response
 - Teams of fire & police
 - 6 phases: Alert, impact, immediate post impact, rescue (5 days), recovery and renewal
- Educate & train
- Practice & evaluate
 - Small to large



E.O.C.C.G.

Emergency Operations Center Control Group

- Command Post; allocates resources, cooperation with local authorities



Fire Emergency Planning

Planning

- Fire emergency planning
- Resources help develop plan best for building
- Pre-plan forms
- Recovery plan to be specific for building



Fire Evacuation Procedures

Evacuation/Notification

- Specify procedures to be followed
- Identify exit routes
- Who does the fire fighting
- How to report a fire
- Accountability after evacuation
- All personnel must be informed
- Notify fire department



Fire Drills

Fire Drills are a Must for Life Safety

- Know two (2) ways out
- Know location of manual station
- Other benefits
- Full load test of fire alarm system
- Observe exit capacity & flow
- Verify response time of floor wardens



Organization Structure

- Plan must be building specific
- Procedures must be posted in building
- Train floor wardens annually/as necessary
- Train occupants
- Document drills
- Identify floor wardens/responsibilities



Organizational Resources

Internal

- | | |
|--------------------|-------------------|
| • Fire Officer | Maintenance Staff |
| • Building Manager | Hum. Res. Person |
| • Risk Manager | Security Staff |
| • Volunteers | Safety Officers |
| • Medical Staff | |

External

- | | |
|-----------------------------|-------------|
| • Fire Dept. | Police |
| • EMS Service | Pub. Trans. |
| • Emergency Social Services | |
| • Federal Agencies | |
| • Insurance Underwriters | |
| • Reciprocal Plans | |



Review

- ✓ What a fire safety plan is
 - ✓ How to achieve quality plan
 - ✓ Code mandates
 - ✓ Elements of fire safety plan
 - ✓ Identification common hazards
 - ✓ Hazard minimization
 - ✓ Fire loss control program
 - ✓ Owner's obligations
 - ✓ Sustainable plan
 - ✓ Emergency planning
 - ✓ Fire emergency planning
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- ✓ Preparedness
 - ✓ Process components
 - ✓ Emergency operations center
 - ✓ Fire emergency planning
 - ✓ Fire Evacuation procedures
 - ✓ Evacuation alarm
 - ✓ Fire drills
 - ✓ Organizational structure
 - ✓ Organizational resources