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## **FORMULATION OF FIRE EMERGENCY PLAN (FEP) FOR COMMERCIAL BUILDINGS & INDUSTRIAL PREMISES**

### **1. Why organize for Fire Emergencies?**

Although EVERY building is constructed and designed to meet certain minimum standards of fire safety, dangerous operational practices, such as wedged open fire doors, obstructed means of egress, locked exit doors and unplugged openings in floors and vertical shafts, frequently exist due to ignorance and carelessness of the building occupiers. EVERY such building also contains large quantities of combustible and smoke-producing materials such as paper, office furnishings. These in the event of fire would generate sufficient smoke and other highly toxic gases to spread throughout the building. Delay, indecision and unawareness of responsibilities cause many unfortunate incidents. A fire emergency plan will assist in overcoming many of these human deficiencies and will prepare the occupants for any emergency so that their evacuation or movements within or out of a building can be accomplished in a safe, rapid and orderly manner. A detailed fire emergency plan is necessary to ensure the safety of occupants in the event of fire. It should be clearly state the action to be taken by all occupants in a fire so that:

- a. Panic is avoided
- b. Evacuation is safe and orderly
- c. Incipient fires are tackled with first aid equipment as far as practicable.
- d. The fire fighters are directed to the exact location of the fire and given any information or assistance required.

Detailed plans should be given to all building staff who may be involved with plant or machinery or fighting the fire. Reduced versions, particularly concerned with action to be taken on discovering a fire and evacuation procedures, should be distributed to all other occupants and displayed in every room (Annex A).

### **2. The Fire Emergency Plan**

A Fire Emergency Plan is a plan which contains information on types of fire safety measures that are provided for in designated premises & includes floor layout plans and evacuation procedures. The owner of designated premises or his designated official will be responsible for the preparation and implementation of the FEP. FEP shall be prepared in accordance with guidelines given by Fire Safety Bureau. The owner shall form a Fire Safety

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Committee to assist him/her to plan, organise and conduct the fire safety programme. FEP shall be reviewed annually or when required by Commissioner. It shall be kept at the Fire Command Center or other place easily available.

### **3 Guidelines for FEP**

Please see attached FEP guidelines for the following types of premises:

- a. Low rise building below 8 storey (exclude departmental stores, supermarkets, emporiums & hotels) – Annex B
- b. Departmental stores, supermarkets, emporiums, hotels (30 storey & below) & high rise commercial building (8 - 30 storey) – Annex C
- c. Commercial high rise building (above 30 storey) – Annex D
- d. Industrial premises – Annex E

There are 3 modes of evacuation depending on the type of premises and number of storey. These can be described as follows:

- a. Low-rise buildings (below 8 storey)

It can be summarized as “single stage alarm” and “total evacuation”. In such buildings, occupants will be expected to effect immediate evacuation of the building on hearing the firm alarm.

- b. Medium-rise buildings (8-30 storey)

The evacuation concept is the “two stage alarm” and “total evacuation”. The sounding of the first alarm (lasting not less than one minute) should be treated as an alert signal and occupants should standby for evacuation. Upon confirmation of a fire situation, the second continuous alarm is sounded and immediate evacuation should be effected.

- c. High-rise buildings (above 30 storey)

The evacuation concept is “two-stage alarm” and “phased evacuation”. First alarm- will ring on all floors, serving as an alert signal. Second alarm- this will confirm the fire situation, the phased evacuation will be initiated.

- (1) First phase

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The “fire floor” and 2 floors above and below it will begin evacuation on being instructed through the announcement made to the effect on a “select-call” basis to these floors. Remaining floors are advised to wait for further instructions. Once the fire of the evacuating floors has reported the “all clear” signal the second phase commences.

(2) Second phase

The floors above “the fire floor” will be evacuated (should not involve more than 20 floors at one time).

Circumstances will dictate whether the building should be completely evacuated through the various phases in a real emergency. In drill it is permissible to evacuate the whole building in gradual phases as described earlier.

The contents of a typical Fire Emergency Plan are as follows:

- a. Objective
  - (1) Purpose
  - (2) Fire Safety Committee
  - (3) Fire Alarm Signals
  
- b. Action to be taken in event of an outbreak of fire
  - (1) Informant
  - (2) All staff
  - (3) Coordinator/Assistant Coordinator
  - (4) Fire Wardens/Assistant Fire Wardens
  - (5) Chief Security Officer/Assistant Chief Security Officer
  - (6) Fire Fighting Team
  - (7) Telephone Operator
  
- c. Fire occurring outside office hours
  
- d. Duties & Responsibilities
  - (1) Coordinator/Assistant Coordinator
  - (2) Fire Wardens/Assistant Fire Wardens
  - (3) Chief Security Officer/Assistant Chief Security Officer
  - (4) Fire Fighting Team
  - (5) Telephone Operator
  - (6) Person responsible for isolation and activation of fire alarm
  - (7) Person receiving the floor evacuation status at the FCC
  
- e. Fire Evacuation Drills

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- f. External emergency support (Industrial)
  - g. Classification of Emergencies(Industrial)
    - (1) Alert 1 - To conduct initial containment & rescue operations
    - (2) Alert 2 - To conduct localized containment/rescue/evacuation with SCDF
    - (3) Alert 3 - To conduct joint operations with external emergency agencies
  - h. General
  - i. Appendices
    - (1) Name list of fire safety committee
    - (2) Site plan of assembly point
    - (3) Typical floor plan
    - (4) Evacuation drill record sheet (Annex F)
    - (5) Standard announcements (Annex G)
    - (6) Floor register (Annex H)
    - (7) Building evacuating status chart (Annex I)

#### **4. General pointers**

##### a. Distribution of the Fire Emergency Plan

Copies of the fire emergency plan should be distributed to all members of the intensive fire safety committee to familiarize them with the emergency procedures.

##### b. Posting of fire emergency instructions

Notices on fire emergency instructions should be posted at conspicuous location throughout the building such as lift lobbies, staff notice boards, reception areas of offices etc. (Annex A)

##### c. Arm bands

All members of the fire safety committee should be supplied with armbands for identification purposes - white for the Fire Safety Manager and his assistant, and red for all others. The armbands will have letters such as FSM, FW/AFW and so on on red and white colours respectively.

##### d. Loudspeakers

It is advisable to procure battery operated portable loud speakers to assist in crowd control during evacuation.

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e. Regular meetings

Fire safety managers should regularly meet fire wardens and other members of the fire safety organization and discuss on the fire safety policies and on the actions to take in case of fire emergency etc. Shortcomings observed during the fire drills should also be dismissed.

f. Training

Training should be held at periodic intervals to keep as many building tenants as possible knowledgeable in basic fire prevention and fire extinguish methods. Interest can only be maintained by keeping the class small- 20 to 30 persons.

g. Organize drills

At least one evacuation drill shall be conducted each year. In high-rise office buildings drills carried out should involve all building occupants. Private sector occupants should be encouraged to participate to the maximum practical extent. Those with the medical conditions and pregnant women may be exempted from participating in drills. Special arrangements should also be made for disabled persons in buildings to be brought down to the ground floor safely. It is important to have an institutionalized system of keeping records of such persons in the building. This record would come in handy during drills and emergencies.

h. Procedures

All personnel, with the exception of those authorized by the fire safety manager shall participate in evacuation drills. Special consideration is necessary for such personnel as those handling money, high security or confidential documents, those conducting laboratory experiments or operating computer equipment. In conducting fire drills involving large numbers of people it may be necessary to check with the police for assistance in crowd control and directing traffic in the area. Prior written notification should also be sent to the Commissioner of Civil Defence before any drills are conducted. Observers should be posted during drills and a debriefing held to rectify all defects. Only by drills can the procedures be evacuated and amended when necessary. Although speed is desirable in evacuating a building it is not the object itself but secondary to maintaining order and discipline during the evacuation process.

i. Maintain year round visual checks of work areas

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The duties and responsibilities of the fire wardens would also include a daily visual check of the floor area and reporting to the coordinator or his assistant of any faulty conditions such as:

- (1) Fire doors wedged or blocked open
- (2) Exit lights out
- (3) First aid fire fighting equipment inoperative or obstructed
- (4) Obvious fire hazards- accumulation of combustible –oily rags
- (5) Defective or unsafe use of temporary electrical wiring

It is the responsibility of the fire safety managers to see to it that all faults are remedied quickly. The fire safety manager is also responsible for ensuring that arrangements exist for any fire hazard or faulty condition observed by night watchmen or security personnel is also reported to him.

j. Fire fighting team

One of the duties of the fire safety manager should be the training and operation of a fire fighting team recruited from among building maintenance and service personnel. The team should be able to attack a fire in its initial stages before the arrival of the Civil Defence fire fighters.

k. Building plans

Detailed plans of the building should be drawn up, the purpose of which is to:

- (1) Give an understanding of the building's structure, hazards and protection
- (2) Help formulate evacuation plans
- (3) Provide information for the Civil Defence in an emergency

The plans should include:

- (1) Fire resisting walls, floors, ceilings and doors, lifts (differentiating firemen's lifts) and staircases
- (2) Ventilating and air conditioning systems and other ductwork
- (3) Major electrical equipment and wiring installations, including those for telephones
- (4) Stores
- (5) Processes and equipment introducing a particular hazard or requiring special protection against fire, water or smoke damage e.g. kitchens, transformer rooms, computer rooms and telephone exchanges

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- (6) Escape and alternative escape routes
  - (7) Fire fighting equipment, sprinkler systems
  - (8) Fire detection equipment
  - (9) Manual fire alarm systems

A complete set of plans should be kept at the Fire Command Centre and appropriate copies of individual storey should be displayed by the main access points to each storey. The preparation of plans may in itself weaknesses in the fire protection of the building e.g. the absence of fire-resisting doors, a breach in a fire –resisting wall or ceiling, missing or damaged fire fighting equipment, unauthorized storage of hazardous materials such as flammable liquids, of the obstruction of an escape route by a partition. Such faults should be remedied immediately.

I. Fire prevention maintenance programme

With time, technical installations are apt to deteriorate; fire loads may be increased; alterations, repairs and decorating reduce structural fire protection or obstruct means of escape; and familiarity and bad habits generally reduce the standard of fire safety in the building. To maintain fire safety, the fire committee and fire safety manager should draw up a fire prevention maintenance programme in conjunction with building maintenance staff. The purpose of the programme is to ensure regular inspections, tests and maintenance of all systems throughout the building. The fire safety manager should be responsible for ensuring, by inspections and spot checks that all work is carried out to a safe standard. This is especially important when outside contractors are involved.

m. Occupant training and awareness

Safety in high-rise buildings can only be achieved if all occupants know what is expected of them in the event of fire- and how to avoid fire in the first place. A detailed fire safety programme is of no value if the occupants are unaware of its existence. Leaflets should be distributed to all occupants telling them of the activities of the fire safety committee, of evacuation procedures and advice on good housekeeping. Drills and discussions on fire safety should be carried out with small groups of people in rotation and notices exhibited in rooms and corridors. The aim should be to establish a continuing responsible attitude to fire safety by all occupants.

These recommendations are intended primarily for the management of office premises. But other occupancies, such as residential flats and hotels, may be present in part or all of a high-rise building. The general principles give should be applied together with modifications suitable for the particular occupancies involved. Hotels present a serious risk, as

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guests are unlikely to be familiar with the layout of the building or means of escape. A very high level of staff is necessary so that staffs are able to supervise guests during an emergency. Shops and restaurants may form part of a multi-occupancy building. In general shops are found only on lower storey but penthouse restaurants are relatively common. Safe evacuation when necessary, calls for well-trained staff and extensive preplanning by management. Hospitals are a serious problem as large-scale evacuation would generally be extremely difficult if not impossible. A very high standard of preplanning and fire precaution is essential. Flats and maisonettes present organizational problems, as individual occupants cannot be expected to take much interest in fire safety unless prompted. In residential buildings responsibility should rest with the building owner and his agents to initiate a fire safety programme within the building, preferably interesting the tenants' association, if one exists, in establishment of a fire safety committee.