

RISK ASSESSMENT:

Introduction:

Environmental risk analysis deals with the identification and quantification of risks the equipment and personnel are exposed to, from the hazards present in the area.

Risk analysis follows hazard analysis ($\text{Risk} = \text{Hazard} \times \text{Probability of occurrence}$). It involves identification and assessment of risks to the personnel and neighboring populations. This requires a thorough knowledge of failure probability, credible accident scenario, vulnerability of population etc., much of this information is difficult to procure. Consequently, the risk analysis is confined to maximum credible accident studies. The subsequent sections shall address the identification of various hazards and risks in the operations, which will give a broad identification of risks involved.

Objective & scope

The objective of the study is to carry out risk analysis and prepare disaster management plan/emergency preparedness plans

The risk analysis/assessment study covers the following:

- (a) Identification of potential hazard due to fuel storage.
- (b) Assess the overall damage potential of the identified hazardous events and impact zones from the accident scenarios.
- (c) Suggestions and recommendations on the minimization of the accident possibilities.

RISK ASSESSMENT & MANAGEMENT PLAN:

a. Construction phase

<i>No.</i>	<i>Potential</i>	<i>Mitigation</i>
1	Accidental fire	Fire safety gadgets
2	Fall of objects	Use of personal protection devices-helmets
3	Working at great heights	Protection to prevent fall; with life safety belts and nets.
4	Accidents from machinery	Personal protection gadgets
5	Electrical mishap	Adopting safety measures to prevent any act of negligence and providing electrical safety measures like fire extinguishers.

b. Occupancy phase:

Precautions for risk and disaster management plan:

- Once the likelihood of the disaster is suspected, preventive actions should be undertaken by the project in-charge.
- Conditional maintenance of equipments, materials and expertise for use during emergency.
- The electrical systems should be provided with automatic circuit breakers activated by over-current.
- Fire extinguishers will be provided at pre-notified locations inside the building.
- Proper escape routes will be planned and displayed in the public domain.
- Selected representatives will be given proper training to guide other inhabitants during fire accidents.

- Periodic awareness program will be conducted for the occupants on their roles during emergency situations.

Important telephone numbers like police authorities, fire department and hospitals etc. of use during emergency situations should be made available.

DISASTER MANAGEMENT

Disaster is an unexpected event due to sudden failure of the system, external threats, internal disturbances, earthquakes, fire and accidents. Following subsection describes the measures to be undertaken by the project proponent to prevent / minimize risk of unexpected event.

Preventive action:

Once the likelihood of a disaster is suspected, action has to be initiated to prevent a failure. Engineers responsible for preventive action should identify sources of repair equipments, materials, labor and expertise for use during emergency.

Reporting procedures:

The level at which a situation will be termed a disaster shall be specified. This shall include the stage at which the surveillance requirements should be increased both in frequency and details. The project in-charge should notify the officer for the following information

- Exit points for the public,
- Safety areas at the site,
- Nearest medical facilities.

Emergency measures:

The proposed project is designed as per the NBC norms and occurrence of accidents is not envisaged. The emergency measures are adopted to avoid any failure in the system such as lights, fire, means of escape, ventilation shafts etc. The aim of Emergency Action Plan is to identify areas, population and structures likely to be affected due to a catastrophic event of accident. The action plan should also include preventive action, notification, warning procedures and co-ordination among various relief authorities. These are discussed in following sections.

Emergency lighting:

The emergency lights operated on battery power shall be provided at appropriate locations. The system shall supply power to at least 25 % of the lights at those locations for a period of 2 hours.

Fire protection:

Fire protection is one of the most essential services to be provided. In design component of the project adequate measures have to be taken as per the provisions of the National Building Code (SP 7: 1983 Part IV Amendment No. 3 of January 1997).

The building materials should be of appropriate fire resistance standard. Wood shall not be used for any purpose, excluding artificial wood products, which are flame resistant. The materials which have zero surface burning characteristics need to be used. The electrical systems shall be provided with automatic circuit breakers activated by the rise of current and by over-current. The design will include provision for the following:

- Fire prevention measures,
- Fire control measures,
- Fire detection systems,
- Means of escape,
- Access for fireman &
- Means of firefighting.

Accumulation of refuse of any inflammable material like paper, plastic cartons constitute a major fire hazard and should not be permitted. Smoking should be strictly prohibited at all public locations.

All aspects of fire prevention and control will be dealt in close collaboration with the city firefighting authority. Smoke control will be achieved by the following means

Down stand bulkheads of a minimum depth of 600 mm to provide smoke containment. These will be provided around openings for escalators, lifts and stairs in underground stations. Adequate firefighting requirement have been taken into account while designing the distribution system for the area. The LPG supply to the apartment will be individual and central LPG supply is not proposed.