

# **Risk Assessment**

## **Risk Assessment**

Industrial accidents results in great personal and financial loss. Managing the accidental risks in today environment is the concern of every person.

Risk Assessment study of an operation is defined as follows:

“The application of a formal, systematic, critical examination to the process of engineering intention of a facility to assess the hazard potential of mal operation or malfunctioning of individuals or items of equipments and the consequential effects on the facility as a whole”

The proposed project is Mega Food Park having Central Processing Centre (CPC) at Paithan.

## **Preliminary Hazard Analysis**

The PHA is performed as the first step in a hazard assessment. It starts with the type of accident involving toxic, flammable and explosive materials. The procedure specifies the system elements (plant components such as storage tanks, reaction vessels) or event (overloading of tank, runaway reaction) that can lead to a hazardous condition.

Once the hazardous system has been identified, the events that may lead to the accident must be specified, Events such as “the formation of explosive atmosphere outside or inside a storage vessel” “or the release of a toxic gas” will need to be examined so as to identify the components of the plant that can cause the accident. The components that include storage tanks, reaction vessels, pipes, pumps, stirrers, relief valves or other system, will then be singled out for more detailed examination by other methods such as the HAZOP. The PHA is fast and cost effective, it identifies key problem.

In CPC the following facilities are being planned as core infrastructure in CPC.

1. Integrated pack house with IQF,
2. Freezer, cold storage,
3. aseptic pulping and packing, sorting and grading lines,
4. ripening chambers, pre-cooling facilities
5. dry warehouses, reefer vans, food testing lab,
6. steam generation,

7. bulk grain silos

Capacities of various components are described below.

1. Freezer room for frozen vegetables - 1000MT
2. IQF Facility -1MT / hour
3. Cold storage - 1000 MT
4. Sorting & Grading line- 3 MT / hour
5. Pre-Cooling facility -10 MT
6. Banana Ripening chambers - 100 MT
7. Aseptic Pulping Line for Mango and other fruits with aseptic filling- 5 MT/ hour
8. Mango Ripening Chambers - 300 MT
9. Dry Warehouse for raw materials and Finished Goods- 70000 SFT
10. Grain silos -10000 MT
11. Steam Generation Unit- 4 Ton /Hour
12. Food Testing Lab
13. Reefer vans- 5 Nos.

**Preliminary risk and hazard identification at CPC**

Following is Preliminary risk and hazard identification.

**Hazard identification:**

Grain silos has potential of fire hazard

**Mitigation measures**

Smoke leak detectors should be installed with local and central warning system.

Fire fighting piping network with hydrant points, hose boxes at specified distances location should be installed and should be designed and installed as per ISI code 13019 around silos and around the factory premises.

Provision for Adequate water storage and other facilities needs to be provided and designed as per IS code 9668

### **Hazard**

If chlorine is used in treatment of cooling tower water, chlorine can pose hazard of leakage and exposure. Then detailed risk and hazard analysis will have to be carried out.

### **Preliminary Mitigation measures**

Depending upon the number of chlorine cylinders/tones used preventative measures like chlorine leak detectors, absorption system will have to be installed. When required proper personnel protective equipments will have to be used and operators will have to trained to handle chlorine

### **Hazard**

Steam generation has hazard of explosion and steam leakage causing burns. For this there is Indian boiler act and it is mandatory to adhere to these standards.

### **Hazard**

Depending upon the type of refrigeration system and refrigerants used like Ammonia, suitable mitigation measures will have to be implemented.

### **Safety Precautions during Storage of Chemicals**

Following safety precautions will be taken during storage of chemicals

- Storage tanks located and marked in designated area
- Selection of tanks of proper MOC
- Uniformly tagging of all tanks
- Provision of adequate fire fighting equipments
- Provision of proper earthing
- Provision of lightening arrester

### **Storage Facility Available at CETP**

In Proposed Common Effluent treatment Plant (CETP) there is no major hazardous chemicals involve except hydrochloric acid during operation phase.

The Chemicals which will be used in CETP are coagulants (alum & poly electrolyte), bleaching powder and hydrochloric acid, lime and urea/DAP

**Table 7.1: Chemicals Required for Operation of CETP and their storage in CETP premises**

<b>Sr. No.</b>	<b>Chemical</b>	<b>Storage</b>
1.	Lime	500 Kg
2.	Polyelectrolyte	200 Kg
3.	Alum	300 Kg
4.	Urea/DAP	200 Kg
5.	Bleaching Powder	100 Kg
6.	Hydrochloric Acid	200 Kg