

# Facility Layout, Product Flow and Equipment

FSKN I 10

Chennai, India

February 2-4, 2011

# GFSI Intermediate Requirement

- Premises, site and/or plant shall be designed, constructed and maintained to control the risk of product contamination.



# Facility Layout

- The factory design should be such to ensure there is no risk of microbiological, chemical or physical cross contamination.
- Consideration must be given to the level of risk in relation to product flow and factory design i.e. the risk of contamination between heat treatment and the finished sealed pack.
- There are three types of hygiene status of product in relation to environment and the type of food being manufactured
  - Good Manufacturing Practice
  - High Care Area
  - High Risk Area
- Raw ready to eat products and raw foods intended for cooking shall not be produced in the same production area at the same time.

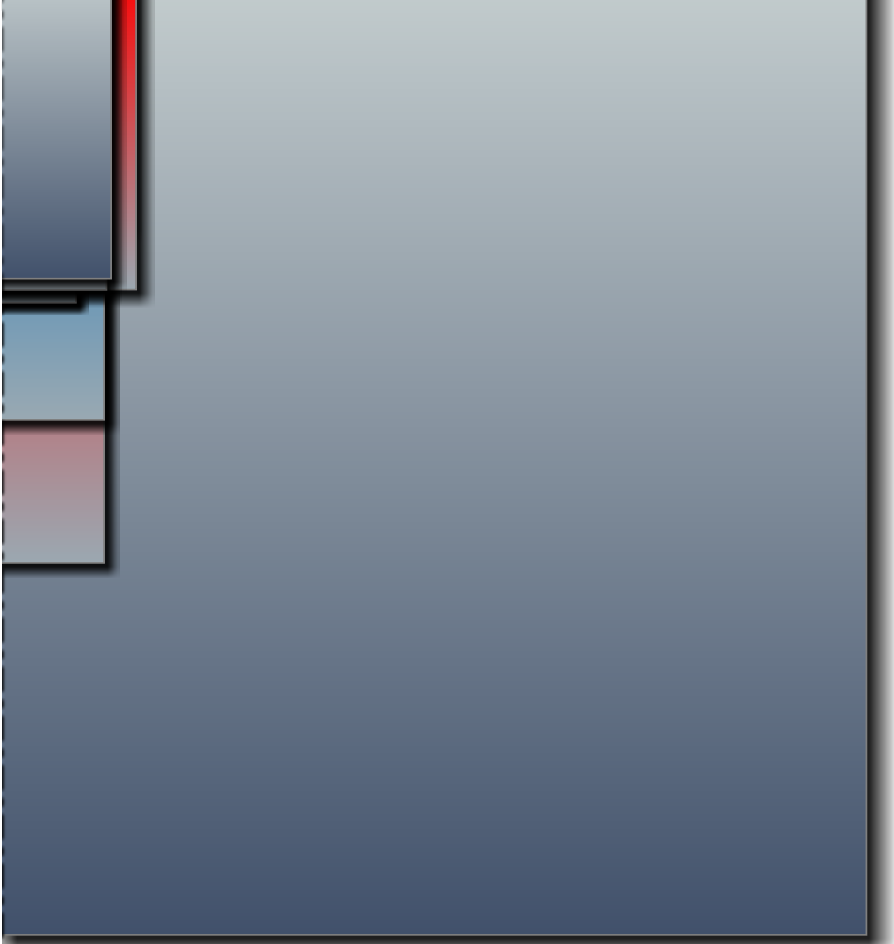
# Conditions in Relation to Hygiene Status

The environmental conditions under which food is processed is dependant on the risk of a food safety issue. This is governed by the potential of the food to be a hazard to health and relates to the type of food, the technology to manufacture the food and the absence or presence of food hazards.

There are three levels of hygiene status; it is important to ensure the environment and associated controls are appropriate to product risk.

1. Good Manufacturing Practice Area- minimum hygienic manufacturing practices - flour milling , sugar confectionery
2. High Care Area- an chilled area designed to a high standard where practices relating to personnel, ingredients, packaging and environment are in place to **minimise** product contamination by pathogenic micro-organisms. – meat boning
3. High Risk Area- A **physically segregated** chilled area designed to a high standard of hygiene , where practices relating to personnel, ingredients, equipment, packaging and environment are in place to **prevent** product contamination by pathogenic micro-organisms - ‘ready to eat ‘ foods

# Chilled Ready Meal Production



# High Risk Food

## Definition

A product intended for consumption, either cold or reheated but without further cooking. It is capable of supporting pathogenic bacterial growth and, if contaminated has the potential for causing food poisoning

**Cooking –Segregation- Hygiene Control**

# Product Flow

- Production lines and product flow should be designed to have a 'linear flow' from raw materials to finished product
- For high care and high risk food production within this 'linear flow' process appropriate segregation should be in place
- With respect to high risk products and where some premises are 'open plan design' , physical partitions should be used to segregate activities and staff
- There should be in place an actual plan of the factory and the production lines to review and confirm appropriate segregation is taken into account with respect to the nature of materials, equipment, personnel, waste, airflow and utilities provision
- The plan should include consideration of staff movement from the entrance of the factory to their place of work and any other movement within the factory i.e. staff facilities
- Where there is a transfer of product from low risk to high risk activities, care should be taken to ensure practices are in place to minimise the risk of contamination
- Carefully consideration should be given to the control of packaging materials

# The Handling and Control of Allergens





# Premises Design

- Consideration should be given to;
  - Building fabrication
  - Drainage
  - Utilities- water, steam
  - Temperature controlled areas
  - Atmospheric controlled areas
  - Waste disposal
  - Staff facilities
  - Utensil washing areas
  - Staff hand washing facilities



# Premise Construction

## Codex requirements:

‘Structures within food establishments should be soundly built of durable materials and be easy to maintain, clean and where appropriate, able to be disinfected . In particular the following specific conditions should be satisfied, where necessary to protect the safety and suitability of food:

- Surfaces of walls and partitions
- Floors
- Ceilings and overhead fixtures
- Windows
- Doors
- Working surfaces

# Premise Construction

## Surfaces of Walls and Ceilings

- Surfaces should be sealed and have a smooth, impervious and easily washable
- Surfaces should be free from cracks and damage
- Junctions should be sealed and preferably coved
- Protect vulnerable surfaces from damage by the use of guard rails
- Services such as piping or ducting passing through walls and ceilings should be sealed

# Premise Construction

## Floors

- Constructed to withstand the rigours of the production process
- Floors should be impervious to moisture and resistant to chemicals and food materials
- Ensure the floor slopes towards drainage channels
- Floors should be designed to reduce the possible retention of water and static water pools
- Drains should be designed to flow from high risk to low risk with no possibility of backflow

# Premise Construction

## Windows

- Externally opening windows in or close to the production area should be effectively screened to prevent the ingress of flying insects
- Preferably there should be no glass in the production area
- If glass is present it should be shatterproof or coated with shatterproof film
- Wherever possible, glass should be replaced with toughened plastic

# Premise Construction

## Doors

- All doors should be tight fitting and pest proofed
- External doors directly opening into the production area should be avoided, Where they exist they should be screened or self closing
- Doors should be of good condition and easily cleaned

# Premise Construction

## Working Surfaces

- All working surfaces should be constructed of appropriate materials that does not pose any risk to food safety
- Surfaces should be impervious, easily cleaned and disinfected and non corrodible
- Surfaces should not be painted or coated with materials that will degradate and pose a risk of a physical hazard



# Equipment Location

- All equipment should be located so not to pose a risk to food safety
- All equipment should be sited allowing ease of cleaning and where appropriate dismantled to allow integral parts to be cleaned and disinfected
- Redundant equipment and spare parts should not be stored in the production area
- Equipment should be positioned to give ease of access for cleaning, inspection and servicing



# Equipment Design

- All equipment should be easily cleanable and capable of being disinfected
- Equipment should be commissioned prior to use and the HACCP plan reviewed in light of changes
- Equipment should only be used for its intended use
- Equipment should be designed to minimise any risk of microbiological contamination due to poor surfaces , inaccessibility for cleaning and the accumulation of residual material
- Equipment should not be painted and free from corrosion, oil and grease
- Lubricants used for food manufacture should only use food grade lubricants
- Where new equipment is purchased ,which has direct contact with food such as conveyor belts, mixers, holding tanks, assurance should be provided of compliance with food contact legislation from the equipment supplier.



# Equipment Design Principles

## CFA Guidelines

1. Equipment in contact with product must conform to legislation e.g. FDA and EU
2. All contact surfaces must be inert to food products
3. All surfaces must be safely accessible for cleaning and for visual examination as manual cleaning is carried out
4. Product surfaces must be smooth, seamless and scratch free
5. The design should promote 'streamlined flow' over food contact surfaces
6. The design should prevent or minimise the occurrence of spillages

# Equipment Design Principles

## CFA Guidelines

7. Design should be as simple as possible. Fewer parts heavier design
8. The design should be kept open as possible
9. There should be no seams, gaps, crevices or any inaccessible recesses
10. Hose down procedures should not allow contamination of cleaned surfaces
11. System must allow good housekeeping practices i.e 'clean as you go'
12. Small detachable parts of machines should be properly secured
13. Parts of equipment which is open to the general environment should be covered

# Equipment Design Principles

## CFA Guidelines

14. Equipment should be free draining and have no 'stagnant' regions
15. All equipment must be designed to withstand alkaline washing solutions and hosing
16. Where equipment is assembled before commission, this should be carried out as far as practicable outside the production area

# Acknowledgements

This material was developed with financial support from the:

- United States Agency for International Development – Michigan State University – Indian Horticulture Development Alliance (IHDA) project, and
- Italian Development Cooperation under the project UE/GLO/09/017 Establishment of an Agribusiness Solutions, Traceability and Upgrading Excellence Centre in Egypt.



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