Microbial Transfer and Facility Hygiene Controls

3-A SSI 2017 EDUCATIONAL PROGRAM

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Global Snapshot

Our Global Technology Innovation Centres bring the best of us to our customers, serving as Customer Centres for collaborative innovation.


Located in Naas, the Global Technology and Innovation Centre opened in May 2015.

Opening in 2016, the Asia Pacific (APAC) Technology and Innovation Centre is located in Singapore.

GTIC
Regional Development & Application Centres
Manufacturing Locations
Agenda

• Plant Environmental Controls
• Sanitary Zones
• Controlling Contamination Vectors
• Niches and Harborages
Plant Environmental Control

- Control incoming contamination sources
  - Employees
  - Suppliers/Ingredients/Materials/Equipment
  - Pests

- Eliminate harborages/growth niches in plants
  - Walls & Floors, Ventilation
  - Equipment design and maintenance

- Control vectors (means of transmission) inside the plant
  - Employees
  - Forklifts, pests, water, air, etc.

- Remove growth factors: Nutrients, water
  - Regular, effective, and thorough Cleaning and Sanitizing
  - Minimize Operational Sanitation

- Validate & Verify effectiveness of control strategies
  - Includes periodic sampling & testing
Sanitary Zones
Sanitary Zones

Plant Environment can be divided into distinct sanitary zones based on food proximity/contact.

Zone 1: Direct Contact
Zone 2: Indirect Contact
Zone 3: Close Proximity
Zone 4: General Area
All Four Zones In One Area – Can we keep them separate?
Zone 4 – General Areas

- Furthest From Food
- No Direct Contact
- Employee Welfare
- Locker Rooms
- Loading Docks
- Warehouse
- Lobby
- Trash/Feed Areas
- Roof, Parking Lot, and Grounds

- Could spread to processing areas by foot or equipment traffic
Zone 4 - Intersections
Zone 3 – Close Proximity

- In Processing Areas
- No Direct Contact
  - Floors
  - Drains
  - Walls
  - Totes
  - Waste Containers
  - Some Cleaning Equipment

- Risk of Transfer to food contact surfaces by vectors.
Zone 2 – Immediately Adjacent

- Immediately Adjacent Food Contact Surfaces
- Equipment Structure
- Conveyor Rails
- Control Panels / HMIs

- Could Transfer to food contact surfaces under NORMAL operating conditions
Zone 1 – Direct Contact

- Inside surfaces of equipment
- Conveyors
- Chutes
- Utensils
- Packaging

- Includes surfaces that can Drop, Drip or Drain into food contact surfaces
Indirect Zone 1 – Overheads
Controlling Contamination Vectors
Contamination Vectors

• Potential Vectors of Transmission Into and Inside the Plant

  • People
  • Mobile Equipment
  • Raw Materials
  • Water
  • Air

  • Cleaning Tools
  • Waste Disposal
  • Pallets
  • Pests
People
People - Contractors
Employee Entrances
SS-1 Unit Sanitizes Sanitzable Footwear
Isolating outside to protect the factory envelope
Raw Materials
Common Carriers – Potential Uncontrolled contamination
Water as a vector - Aerosolization
Water as a vector – Microbial transfer to drain
Water as a vector – Root cause of microbial recovery in drain
Water as a vector – Root cause of microbial recovery in drain
Root cause fix – Self draining Design
Air as a vector of contamination – Filter bypass
Air – Cooling Air vector from birds (filter bypass)
Compressed Air – Filtered at point of use
Niches/Harborages
Un-cleanable interfaces - flanges
Un-cleanable Interfaces Harborages/Niches
Removal of flanges contacting floor – elimination of harborage
Good Design – Limited floor contact
Factory Design for prevention of Microbial Transfer
QUESTIONS?