



Leading to Better

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.



Agenda

- Plant Environmental Controls
- Sanitary Zones
- Controlling Contamination Vectors
- Niches and Harborages

Plant Environmental Control

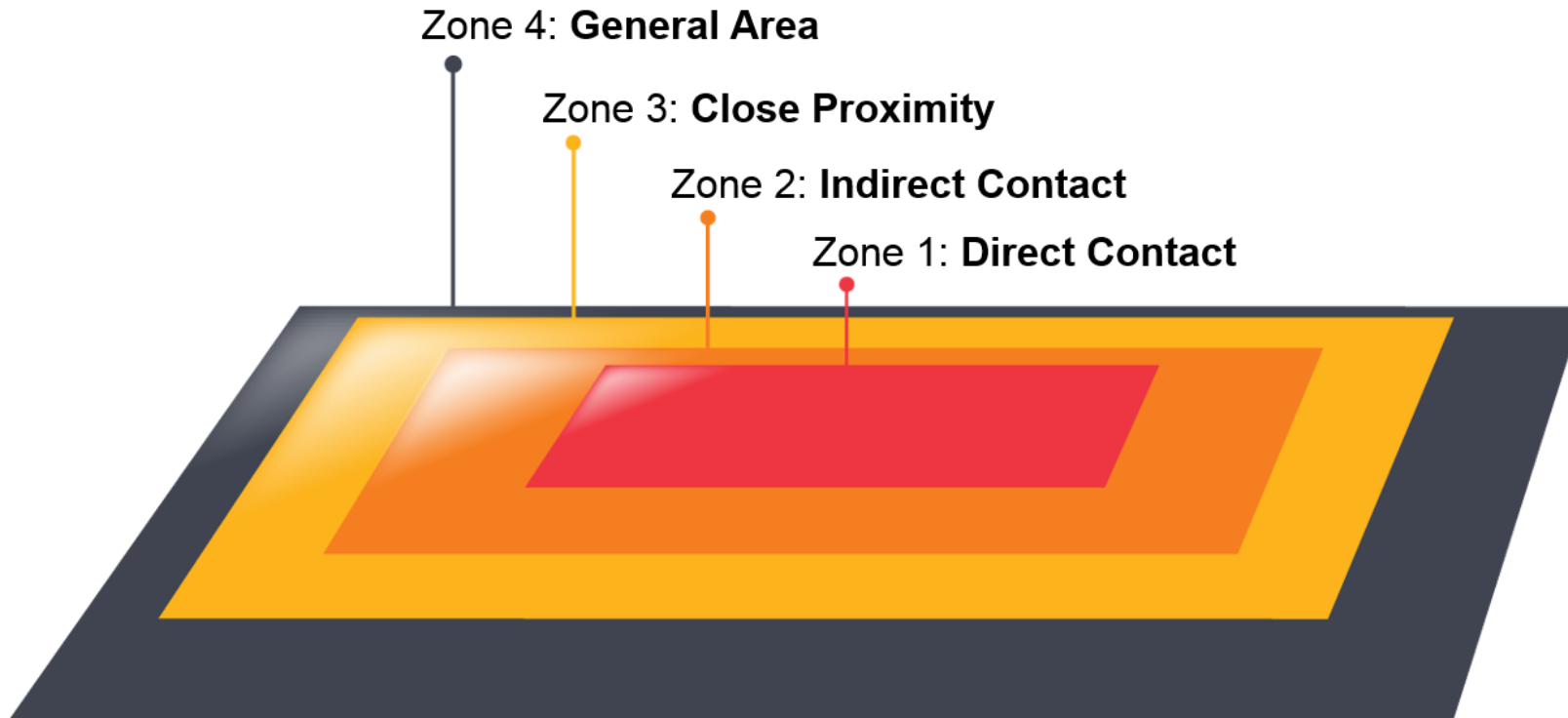
- ▲ Control incoming contamination sources
 - Employees
 - Suppliers/Ingredients/Materials/Equipment
 - Pests
- ▲ Eliminate harborages/growth niches in plants
 - Walls & Floors, Ventilation
 - Equipment design and maintenance
- ▲ Control vectors (means of transmission) inside the plant
 - Employees
 - 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.



All Four Zones In One Area – Can we keep them separate?



Zone 4 – General Areas



• 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

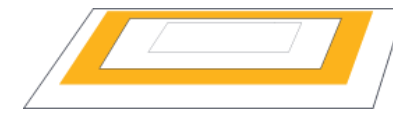


- Could spread to processing areas by foot or equipment traffic

Zone 4 - Intersections



Zone 3 – Close Proximity



• 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



• 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



Direct Contact

- Inside surfaces of equipment
 - Conveyors
 - Chutes
 - Utensils
 - Packaging
- 
- A close-up photograph of industrial food processing equipment, likely a conveyor or chute system, made of polished stainless steel. The image shows curved metal surfaces and mechanical components, illustrating the type of equipment covered by Zone 1.
- 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 Sanitizable 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



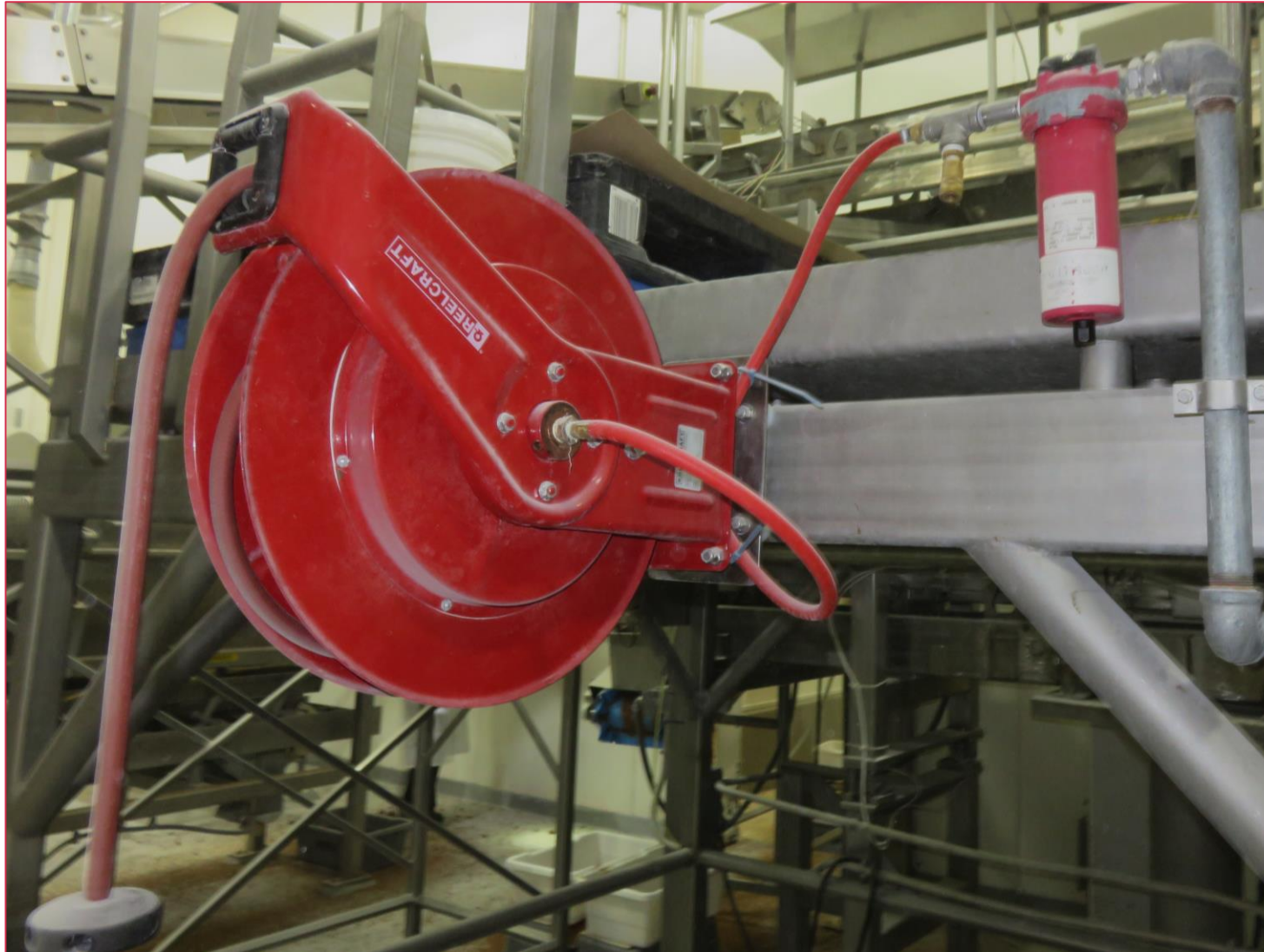
Air as a vector of contamination – Filter bypass



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



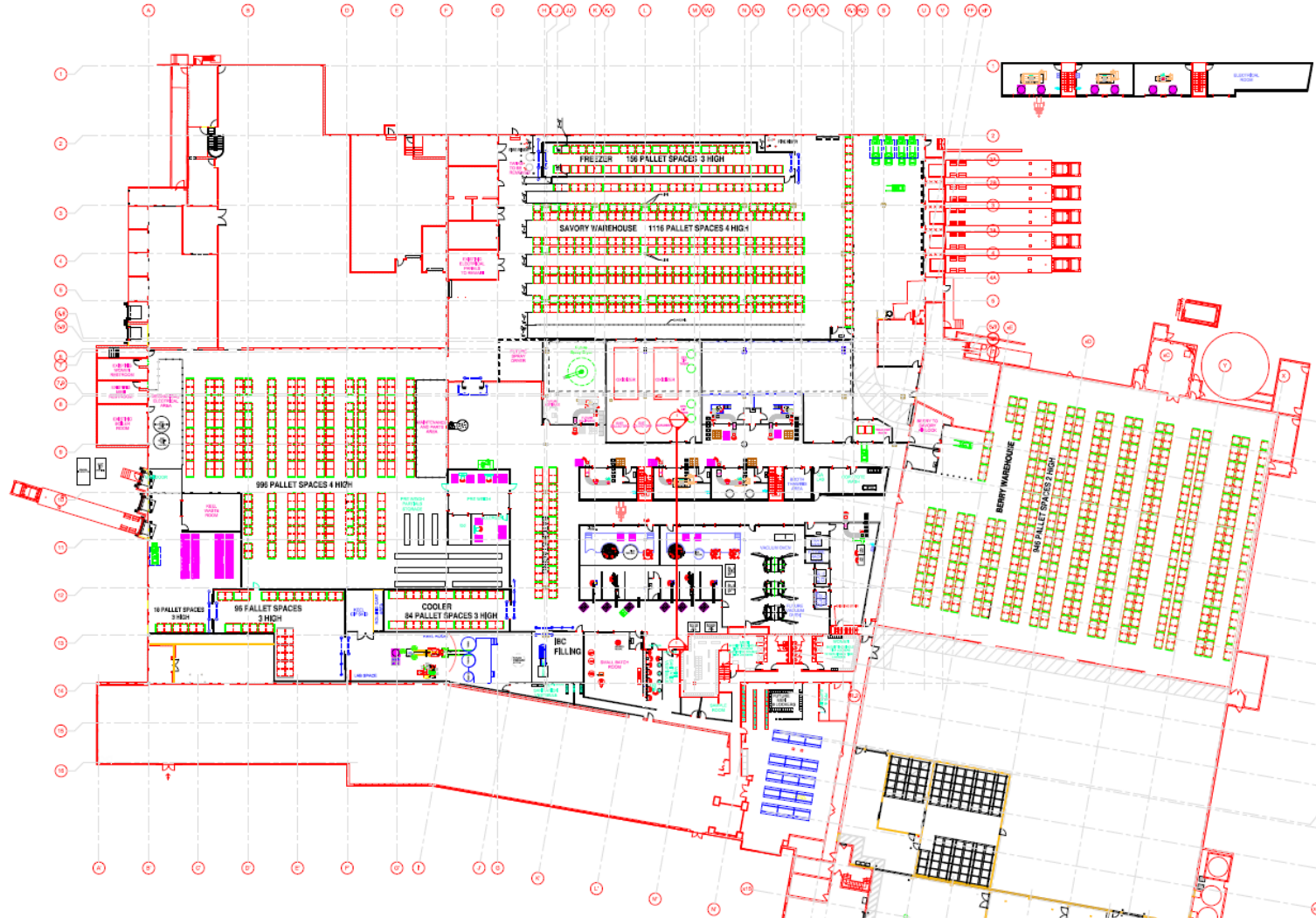
Removal of flanges contacting floor – elimination of harborage



Good Design – Limited floor contact



Factory Design for prevention of Microbial Transfer



QUESTIONS?