



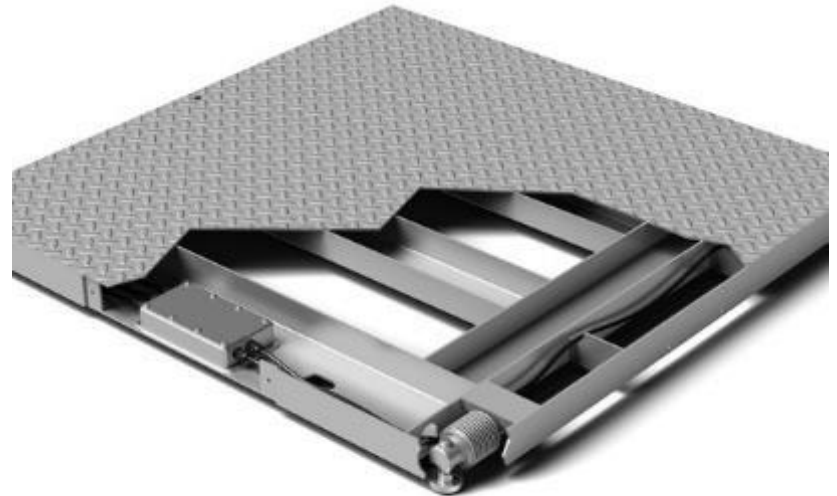
Listeria monocytogenes
Intervention & Control Workshop

Case Studies: Investigation Toolbox
Erin Mertz, Ecolab



Zone 3 Case Study – Floor Scale

- Case
 - Environmental Listeria positives
 - > 6 months / persistent
 - No FP positives
- Actions
 - Review the data
 - Check the sanitation practices
 - Review infrastructure and equipment sanitary design



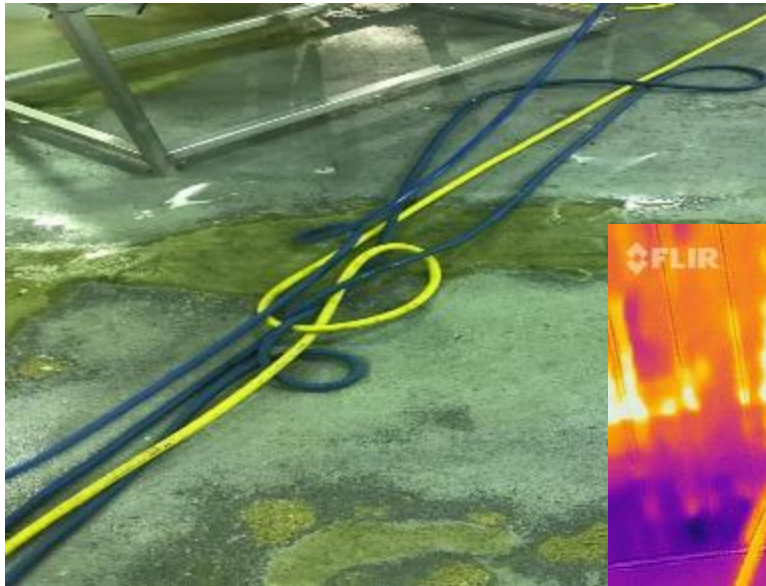
Zone 3 - Review

- The data showed a widespread area of positives
 - Percent positive showed one drain was higher than others
 - Rarely above waist level
- Sanitation review was conducted and found some opportunities
 - Cleaning chemical concentrations 3-4x higher than recommended
 - Poor traffic control during sanitation
 - Operation traffic control was excellent
 - Temperature control in cold storage was moderately cool

Zone 3 - Findings



Zone 3 – Key Findings



Zone 3 – Corrective Action

- Increase sanitation frequency of floor scale <9 days
- Replace top of scale with heavier gauge metal to prevent pooling
- Zoning redone to minimize traffic crosses
- New hose drop / repaired
- Conduit replaced to eliminate harborage



Zone 1 and 2 – Case Study

- Environmental positives
- Pre-op failures – micro and ATP
- Poor sanitary design causing challenges in sanitation and product shelf life / quality
- Sanitary Design training needed for sanitors, operators, maintenance, quality to help identify problems



Zone 1 and 2 – Actions

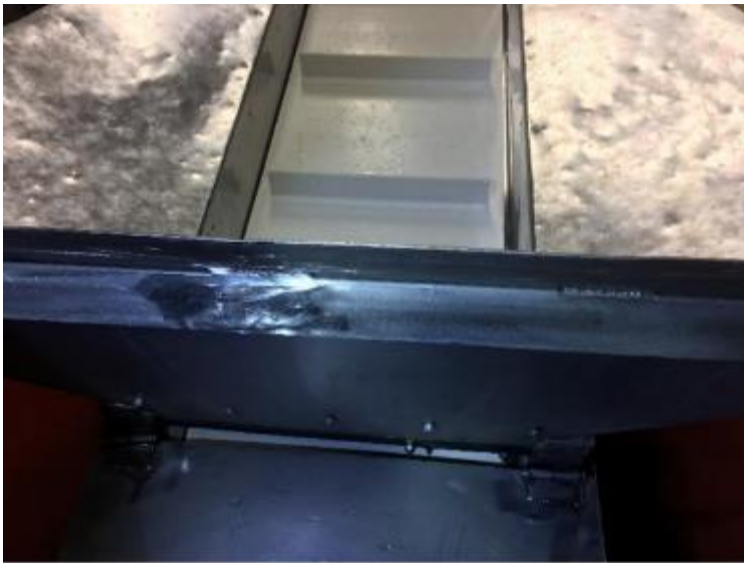
- Train the team
 - More eyes to review
 - Start on example conveyor that has had repeat failure on Pre-Op swabs
- Conduct review of entire production area
 - Reduce environmental positives
 - Improve pre-op pass rates



Training – Hollow Bodies



Training – Cleanability



Exposed threads above product



Training – Cleanability



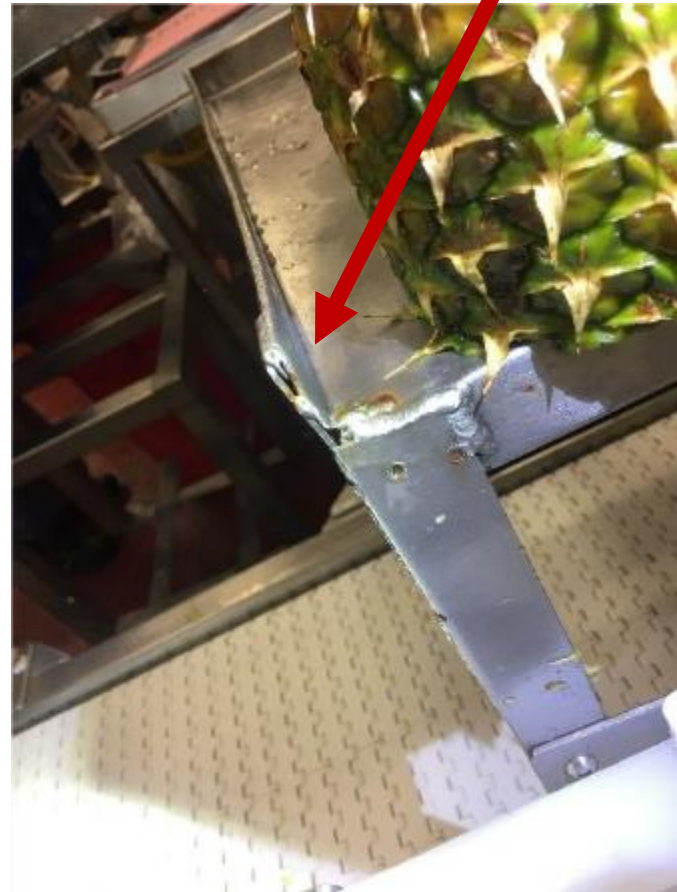
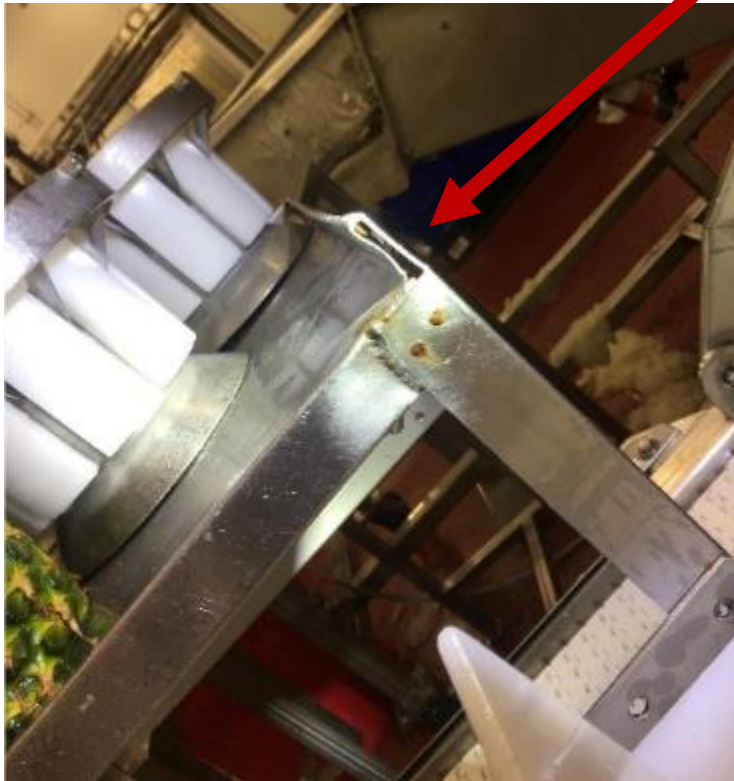
Training – Product Collection

- Look from high and low
- Use checklist
- Work as a team
- Using flashlight



Production Line – Findings

- Niches that were very difficult to clean



Production Line – Findings



Production Line – Findings

- Changes in installation – sandwich joint



Production Line – Findings

- Changes over time –
harborage area



Production Line – Findings

- Cloth belt
- Cracked welds



Production Line – Findings

- Hard to clean areas above product



Production Line – Findings

- Practices – resting on insanitary surfaces



Zone 1 and 2 – Corrective Action

- Significant redesign of several pieces of equipment
- Established a sanitary design team that conducted regular reviews
- Clean Out of Place utilized for parts that are removed
- Periodic teardown cleaning scheduled for equipment that could not be fully redesigned



Zone 1 and 2 – Results

- Improvement in Environmental compliance
- Improved pre-operational sanitation first pass rate
- Improved sanitation turn around time
- Cost reduction in chemical spend



Zone 4 Case Study – Utilities

- Case
 - High spoilage rates in packaging for mold
 - Product tested low for mold
- Actions
 - Check the packaging
 - Check the sanitation
 - Use air sampling to understand hot spots
 - Review the design of the facility to maintain sanitary conditions



Zone 4 – Key Finding

- Facility Sanitary Design Review
 - Noticed musty smell when walking through adjacent corridors to the production area
 - Found a stream of water running across the floor in a dry storage/utility area
 - Climbed a ladder to look on the mezzanine to see boxes



Zone 4 – Corrective Action

- Insulate the line
- Relocate the air filters
- Training provided to maintenance team on sanitary design and temporary repairs
- Air sampler purchased and periodic monitoring



Thank you