Drainage!

Raising the profile...
Why hygiene?

Contaminated sausages 'kill 15 people' in Denmark listeria outbreak
Why Drainage?

Because it matters...

and there is a link!
“We report the detection of Listeria in 34 dairy plants. In total, 547 of food, product contact surface and floor drain samples were collected along the product lines. Nineteen cheese factories (55.8%) were contaminated by Listeria. Listeria was found in 6.8% of food samples, 11.3% of product contact surfaces and 40.6% of floor drains.”
Listeria will survive in the environment if there are not good sanitation procedures in place. Because it survives in cold, wet environments, it can be found in drains or other areas of condensation within a plant. This bacterium can be deadly. Don’t take chances.
Listeria & drains...

- 10,000 environmental swab samples in high risk for Listeria

- Levels
  - Cleaning equipment 47%
  - Drains 23%
  - Floors 17%
  - Food production surfaces 2%
“Floor drains in food processing facilities are a particularly important niche for the persistence of listeriae and can be a point of contamination in the processing plant environment and possibly in food products”

“Drainage is a critical component affecting the hygienic performance of food production. Effective drainage helps mitigate hazards from the external environment and is central to the safe and hygienic operation internally”
Drain Interface

The cause of factory closure…!
Food safety management systems—Requirements for any organization in the food chain
Pre-Requisite Programme

- The implementation of good hygiene and manufacturing practice:
  - Provide basic environmental and operating conditions
  - Underpin the HACCP system
  - Must be in place and fully operational
  - Is required for the production of safe, wholesome food.

Hygienic Infrastructure

1. Hygienic design of factories
2. Factory Site
3. **Factory Buildings (inc. Drains)**
4. Segregation
5. Process Lines
6. Design of equipment and utensils
7. Personal hygiene
8. Transport

Hygienic Practices

1. Maintenance
2. Personal Hygiene
3. **Cleaning & Disinfection**
4. Allergen control
5. Environmental sampling methods
6. Pest control
7. Foreign body control
8. Waste disposal

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Design Issues...

- Area of application
  - Hygiene requirement
  - Loading issues
  - Use (fluid type)
- Grating requirements
- Capacity (Hydraulic)
- Installation & Cleaning
  - Thermal shock
  - Chemical attack
- Change of use | Durability | Future Proof

Understand the relative importance of the issues to make the correct specification...
Functionality...

- Interception
- Conveyance
- Barrier

The choice of drainage influences the design of the floor....

» Channels tend to lead to simpler fall design.
» Gullies tend to require more complex fall design.
» Impacts floor design and functionality.
2015

- Guidance documents now number 44 with the latest information to be launched

- “Hygienic Principles for Food Factories”
Success is in the detail....
Apply standards reserved for food contact surfaces EN 1672 and EN ISO 14159 to the drainage design.
Avoid

- Not drainable design
- Continuously welded lap joint
- Welded in corners

Recommend

- Drainable design
- Continuously welded butt
- Round internal corner
- Welded in smooth area
Rounded component features generated using advanced deep-drawn metal cold forming techniques.
Deep drawn forming used to minimise welded joints

Lapped joints eliminated using advanced robotic automated welding techniques
Good gully design eliminates residual standing wastewater in body.
Helping Hygiene | Design

- Round corners
  - minimal 3 mm
- Minimal slope 1%
  - longitudinal and cross
  - on all areas
- Outlet without deformation
- Reinforced bottom
  - for width > 300mm
- New filling of edge

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BS EN 2516 - Passivation of Corrosion Resisting Steels and Decontamination of Nickel Base Alloys
Reduce the risk of slips by your operatives by removing excess fluid from the floors.

Correctly specified drainage will reduce the risk of trips on drains that are bent or rocking.

Ensure grates can be removed without cutting your hands.
Make drainage easy to access and clean and it will get done and not ignored.

Well planned drainage will reduce your cleaning time and your cleanings costs.

Properly cleaned drainage will reduce the risk of poor hygiene.
Choosing the right steel
Welding Process
Pickle Passivation
Product design considerations
PAS99 Certification
Food industry knowledge
Operational considerations
Hygiene by Design | Key Messages

- Ignore drainage and take a risk!
- Drainage is a fundamental part of HACCP / PRP
- There is no easy solution when it goes wrong! Plan for drainage!
- The role & *specification* drainage is hugely important
- A good outcome requires linkage with *floors* and *cleaning*
- Remember to think about *drainage first* before its too late!