Sanitation discussion

A Nestlé Perspective

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What story is being told in your factories every day?
Nestle is leading in a highly competitive market

The CHF>10bn Food and Beverages companies 2021
Annual F&B reported sales (CHF bn, 2021)*

Global player
Local/regional player
Nestlé

* Computed with last 4 quarters available (different fiscal year) / ** 9M 21 / ° 2016 result

NB: Mars & Lactalis figures are estimates. Unilever figure is F&B sales only.
Nestlé US brands are in 97% of households
NESTLÉ IN THE U.S.

- 7 operating companies
- 34 states
- 68 manufacturing facilities
- About 36,000 employees
- Largest market for Nestlé globally
Cleaning and Disinfection

First thing we do...

...Or last thing we do?
Cleaning and Disinfection

- Why are we cleaning?
- When are we cleaning?
- How are we cleaning?
Cleaning and Disinfection

Cleaning methods (how)
- Wet/Controlled Wet
- Dry
- CIP/aCIP/COP/Manual
- Alternative methods

Cleaning types (why and when)
- Full cleaning
- Intervention cleaning
- Changeover cleaning
- Housekeeping
- Process cleaning / Environment cleaning
- Non-Routine cleaning
  - Master sanitation schedule cleaning
  - Deep cleaning
  - Event remediation cleaning
  - Sanitary PMs
The mathematics of operational microbiology

\[ H_0 - \sum R + \sum I \leq FSO \]

Leverage the Continuous Improvement cycle to drive progress
Does your testing program give you what it promises?

![Diagram showing confidence/reliability vs total cost with points labeled FG, RM, Line (z2), and Env (z2-4).]
Does your testing program give you what it promises?

<table>
<thead>
<tr>
<th>Materials and Materials Mgmt</th>
<th>Environment (z2-4)</th>
<th>Line Health and Hygiene (z1)</th>
<th>Finished Goods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk assessment -&gt; inspection plan -&gt; data mgmt -&gt; SMI</td>
<td>Zoning -&gt; Entry routines -&gt; env data/activity</td>
<td>Site Selection -&gt; Testing frequency -&gt; testing targets -&gt; data trending -&gt; extended run link</td>
<td>Test parameters -&gt; data mgmt -&gt; release confidence</td>
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</tbody>
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Target zone (risk tolerance)

Lower intensity

Higher intensity

= for illustration purposes only, generalized system performance/health position. Will vary by each factory site
Does your testing program give you what it promises?

Large standard deviation (SD) –
- due to wide variability
- promotes intervention cleans
- discourages maximizing production time
- drives high risk of nonconformance
- difficult to justify
“Pathogen Monitoring Modernization”

Transforming our approach to verification testing to **improve sanitation** and unlock production efficiency

- **Process Release**
  - Emphasis on process control
  - Normalize transient ‘noise’
  - Process confidence, high data reliability
- **TPM/Lean Manufacturing**
  - Process Capability
  - Defect elimination / Data intelligence
  - Catalyze capability building/build autonomy
- **Reduce microbiology holds/events**
  - Detect change early; REACT
  - Custom target setting
  - Minimize supply chain disruption
Factory Process Health Data

Capability study // Enterobacteriaceae

- Map line for strategic test sites (z1)
- High Frequency Testing / around the clock / 30-90 days
- Establish ‘controlled performance’ criteria
- Re-establish testing frequency
- Daily data review + trend analysis (establish routines)
- ATTACK THE BOTTLE NECKS
- Sustain performance
Factory Process Health Data

15wk period // Enterobacteriacea

- 6 frozen meal lines
- same facility; same period
Factory Process Health Data

15wk period // Enterobacteriaceae
Factory Process Health Data

15wk period // Enterobacteriaceae

EB spike rate by unit operation
Factory Process Health Data

15wk period // Enterobacteriaceae

EB spike rate by unit operation

Incident Rate by Blancher
Cleaning and Disinfection

- Why are we cleaning?
- When are we cleaning?
- How are we cleaning?
Data-based projects to maximize production opportunity

- Optimize cleaning and disinfection
- Improve Hygienic Design
- ‘Narrow the bell curve’
- Increase productivity
Thank you
Advancements in Sanitation for the Prevention and Control of Food Safety Hazards

Getting to the Root of it all: PEOPLE

Angela Anandappa Ph.D.
THEY ARE GOING TO KILL ME.

I CAN’T TELL THEM.

I CAN’T SOLVE THIS BY MYSELF.

I MUST TELL THEM.
THEY ARE GOING TO KILL ME.

I CAN'T SOLVE THIS BY MYSELF.
Food Safety is about Prevention
CULTURE

- Being innovative
- Flexibility
- Sights and sounds
- Teams, Zoom, Slack, etc.
- Casual Fridays
- Pool tables and gaming
- Salad bars and all-day coffee
- Networking events
- Going to conferences
FACTORY CULTURE

- Communication
- Sights and sounds
- PPE
- Safety
- Reliability
- Time constraints
- Relationships
- Trust
- Teamwork
EFFICIENCY IS DOWN

THERE IS AN ISSUE

SOMETHING IS NOT BEING MAINTAINED

EMPLOYEES AREN’T CLEANING IT PROPERLY

THE TOOLS TO CLEAN ARE UNUSABLE

THE TOOLS WERE NOT REPLACED

NO ONE WHO COULD REPLACE THEM KNEW

EMPLOYEES WERE NOT REPORTING ISSUES

EMPLOYEES WERE NOT GIVEN A VOICE
WHAT DRIVES THE ACTION?

Rules:
Laws, Regulations, Certification, Managers

Behaviors:
• How we do things
• What we would never do
• Organization’s culture
ENABLERs of CULTURAL TRANSFORMATION

A shared mission/value

Measurable and achievable goals

Feeling connected

Recognition, Rewards and incentives

Environment free from obstacles to success
1: CHANGE YOUR LANGUAGE
2: CHANGE YOUR ACTIONS
3: EMPOWER YOUR EMPLOYEES
Do your employees see themselves as your customer?
Who do you go to first to solve a problem?

How should ideas be generated?

How are employees given a stake in their labor?

How can we make sure our people can speak freely?
REMOVE OBSTACLES
Psychological Safety

- Encourage bringing up issues proactively
- Follow up and follow through
- Ensure ALL employees can have a voice and are heard
- Combine Ownership & Transparency to foster TRUST in leadership and TRUST between co-workers
PROBLEM SOLVING
The Quality Toolkit CAN be applied here too!
PEOPLE

- To help your organizations deliver safer food to the world, you’ve got to invest in developing people who care about the product.
- People care about things that have meaning to their lives.
- Everyone wants to be seen.

www.sanitationalliance.org
MAKING THE CASE FOR SANITARY DESIGN

Food Safety Summit
Rosemont, IL
May 9, 2023
PRESENTATION OVERVIEW

- Food Manufacturer Obligations
- Evolution to Sanitary Design
- Principles of Equipment Sanitary Design
- Principles of Facility Sanitary Design
- Making the Case for Sanitary Design
  - Cost of Sanitation
  - Benefits to Sanitation
  - Benefits to Operations
  - Benefits to Maintenance
FOOD MANUFACTURER OBLIGATIONS

Protect Customers
• Prevent illness or injury to consumers
• Prevent losses by our customers

Protect Company
• Prevent harm to company, brand names
• Assure continuity for employees, stakeholders
• Prevent legal liability

Regulatory
• Conform to regulatory requirements
• Prevent regulatory control action, scrutiny
EVOLUTION TO SANITARY DESIGN

- Stainless steel introduced in 1908
- Buildings built or purchased for productivity
- Equipment designed for throughput
- Belief was that with time and chemicals the facility could be cleaned
- Significant foodborne illness outbreaks in 1980’s and 1990’s...
- Implementation of regulations to promote food safety systems
- American Meat Institute (AMI) multidisciplinary task force formed, developed 11 Principles of Sanitary Design for Facilities, 10 Principles of Sanitary Design for Equipment
SANITARY DESIGN DEFINED

- Defined: the application of engineering techniques which allow the timely and effective cleaning of the entire manufacturing asset

- Intent: to prevent significant food hazards:
  - **Food pathogens:** *Listeria monocytogenes*
  - **Food spoilage:** lactic acid bacteria, mold
  - **Food allergens:** wheat, egg, soy, milk, peanuts, tree nuts, fish, crustacean shellfish and sesame
SANITARY EQUIPMENT DESIGN

10 Principles from the North American Meat Institute (NAMI)
EQUIPMENT SANITARY DESIGN PRINCIPLES

1. Cleanable to a microbiological level
2. Made of compatible materials
3. Accessible for inspection, maintenance, cleaning and sanitation
4. No product or liquid collection
6. Hollow areas should be hermetically sealed. No niches; free from tack welds
7. Sanitary operational performance
8. Hygienic design of maintenance enclosures
9. Hygienic compatibility with other plant systems
10. Validate cleaning and sanitizing protocols
# VALIDATION VS VERIFICATION

<table>
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<th>Verification</th>
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| ▪ Will the process we have defined prevent or significantly reduce a food safety hazard?  
  ✓ Provides scientific documentation that the process is effective  
  ✓ Documentation may be testing, peer reviewed papers or regulatory documentation | ▪ Are we following the validated process?  
  ✓ Verification is a planned series of monitoring and testing  
  ✓ Monitoring the sanitation process against procedures is verification  
  ✓ Pre-op is further monitoring to verify sanitation is effective |

Microbiological swabs for environmental organisms or spoilage organisms  
ELISA swabs for food allergens, where they are available
SANITARY FACILITY DESIGN

11 Principles from the North American Meat Institute (NAMI)
FACILITY SANITARY DESIGN PRINCIPLES

1. Distinct Hygienic Zones Established in the Facility
2. Personnel and Material Flows Controlled to Reduce Hazards
3. Water Accumulation Controlled in the Facility
4. Room Temperature and Humidity Controlled
5. Room Airflow and Room Air Quality Controlled
6. Site Elements Facilitate Sanitary Conditions
7. Building Envelope Facilitates Sanitary Conditions
8. Interior Spatial Design Promotes Sanitation
9. Building Components and Construction Facilitate Sanitary Conditions
10. Utility Systems Designed to Prevent Contamination
11. Sanitation Integrated into Facility Design
MAKING THE CASE FOR SANITARY DESIGN

How do we sell sanitary design to those involved in financial decisions?
SANITATION COST PER DOLLAR

- Labor = 46.5%
- Water/Sewage = 19%
- Energy = 8.0%
- Cleaning compounds = 6.0%
- Corrosion damage = 1.5%
- Miscellaneous = 19.0%
  - PPE, cleaning and sanitizing tools and equipment

- Labor is the largest cost per sanitation dollar spent
  - Our employees are a valuable resource

- Water is not only a significant part of the expense,
  - it’s a valuable resource that can become limited
  - Just ask people in the food industry in CA and TX!
SELLING SANITARY DESIGN

What gets more serious attention?

This

OR

This
SELLING SANITARY DESIGN

- Understand the sanitation cost per dollar

- Conduct a sanitary design audit
  - Identify opportunities for improvement
  - Prioritize the corrections needed (high, medium, low; near term, long term; A, B, C etc.)

- Work with supplier, FAT; personnel safety, maintenance, cleaning/sanitizing

- Show the benefits
  - Prevent food safety hazards
  - Sanitation efficacy/efficiency
  - More productivity, fewer late starts
  - Less Than Daily cleaning
  - Resource utilization for Master Sanitation
  - Reduce regulatory findings
  - Maintenance efficiency
  - Consistent product shelf life
IMPLEMENTATION OF SANITARY DESIGN

- Meet our obligation to customers and consumers +
- Meet our obligation to protect the company good name and our valued brands +
- Meet our obligation to our stakeholders +
- Meet our obligation to regulatory conformance and prevent regulatory control action +
- Continuous improvement for sanitation, operations and maintenance efficiency

Connect with me on LinkedIn, email me at akacramerscorner@gmail.com
You can find more information on Sanitary Design with the purchase of “Food Plant Sanitation: Design, Maintenance and Good Manufacturing Practices”, available at crcpress.com or taylorfrancis.com