Beaconpoint Labs: *Listeria* Basics

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Definitions

- **Niche** – a place where bacteria can hide because routine sanitation can't reach
  - Hollow rollers
  - Wires that are bundled and zip tied together
- **Seek and Destroy** – An investigation tool used to find the source of Listeria and eliminate it.

Now some data, courtesy of the CDC

- Listeriosis ranks notably high in terms of severity rather than frequency
- Listeriosis is relatively rare compared to other foodborne illnesses. It's estimated to be around 1,600 cases per year in the United States.
- Despite its rarity, listeriosis has a high hospitalization rate. Over 90% of people diagnosed with Listeria are hospitalized due to the severity of the infection.
- Listeriosis has a significant mortality rate. It is responsible for about 260 deaths each year in the United States, ranking among the highest for foodborne pathogens.

In summary, while Listeria infections are less common compared to other foodborne pathogens, the illness is exceptionally severe, leading to high rates of hospitalization and mortality, especially among vulnerable populations.

Listeria is a FOOD industry problem

- **Jalisco Products, Inc. Cheese (1985) - Impact**: 52 deaths, including 19 stillbirths or neonatal deaths. **Cause**: Improper pasteurization processes and insanitary manufacturing conditions.
- **Sara Lee (1998-1999) - Impact**: 15 deaths, 6 miscarriages, and numerous illnesses. **Cause**: Contamination of hot dogs and deli meats during processing.
- **Maple Leaf Foods (2008) - Impact**: 23 deaths and numerous illnesses. **Cause**: Harborage in equipment.
- **Jensen Farms Cantaloupe (2011) - Impact**: 33 deaths and 147 hospitalizations. **Cause**: Redeployed equipment plus poor sanitation.
- **Blue Bell Ice Cream (2015) - Impact**: 10 cases of illness, including 3 deaths. **Cause**: Sanitation.
- **Dole Packaged Salads (2016) - Impact**: 19 hospitalizations and 1 death. **Cause**: Insanitary conditions.

So what happened in 2024?

- **Boar's Head –**
  - **Impact**: 61 illnesses, 10 deaths.
  - **Cause**: Insanitary manufacturing conditions.
  - **Scope:**
    - Recall expanded from 207, 528 lbs. to over 7 million lbs.
    - From one line to everything in the plant made from May 31, 2024 to July 29, 2024
- **Yu Shang –**
  - **Impact:** 19 illnesses, 2 deaths (Infants).
  - **Cause:** Insanitary manufacturing conditions**?** (outbreak strain found in environment)
  - **Scope:**
    - Recall expanded from 4,589lbs. to 72,240 lbs.
    - From one line to everything in the plant made prior to October 28, 2024
- **Bruce Pac** (no illnesses/deaths reported)
  - **Cause**: not published
  - **Scope:**
    - Recall expanded from 9,986,245 to 11,765,285 lbs.
    - Downstream recalls expanded to nearly 40 brands that used the product as an ingredient.

And once again, not just Meat and Poultry

- **Treehouse Foods** (no illnesses/deaths reported)
  - **Cause**: sanitation
  - **Scope:**
    - Recall expanded once to nearly 10 million cases of product, impacting all skus (242) within their shelf life (12-18 months).
- **Sysco Imperial Brand Supplemental shakes (2025)**
  - **Impact:** 37 illnesses, 12 deaths
  - **Cause:** unknown
  - **Scope:**
    - The outbreak strain is tied to illnesses dating back to **2018**
- **FreshRealm/Nate's Fine Foods (2025)**
  - **Impact:** 25 illnesses, 6 deaths
  - **Cause:** Raw Material (pasta)
  - **Scope:** USDA recall on 6/17/25 expanded to FDA recall on 9/30 impacting 9 further brands

Why?

- Based on previous outbreaks and what is known about these, the leading suspects are:
  - Poor Sanitary Design of Equipment/Facility
  - Poor Preventive Maintenance Schedule adherence
  - Poor Master Sanitation Schedule adherence
  - Under processing
  - Not seeking and destroying so Lm becomes resident in the facility

How does Listeria get from the soil outside into the plant?

Step	activity
1	Worked out in the garden or maybe mucked out the cow barn and pick up lots of  on your shoes
2	Discovered the dog chewed up your laces so you put on your outdoor work shoes and go to work
3	Track  on the bottom of your shoes into the locker room
4	Your coworker wears their captive boots into the locker room and picks up  on their boots
5	Boot scrubber is out of Sanitizer and the  catch a “ride” into the production floor
6	Product on the floor is chased around with a high pressure hose (instead of a squeegee) which aerosols the  which then lands on the side of the rollstock machine
7	Line worker’s apron touches the side of the machine and the  gets transferred to the apron
8	Line worker’s gloved hand brushes up against the apron and the  get transferred to the product

Leading root causes…

- Not following preventive maintenance procedures
- Not starting the investigation until the test confirms positive
- Not following the MSS (Master Sanitation Schedule)
- Not following PIC/PEC (Periodic Infrastructure/Equipment Cleaning) Schedule
- Not using data to adjust frequencies of the above
- Not minding paths of cross contamination (people, air, equipment, packaging, ingredients)
- Not taking a brutally honest look at the operation and think how does the dirt outside:
  - Get into my operations?
  - And once in the operation, how does it become resident?

What's in your detection tool box?

- S&D (Seek and Destroy) **not** for cause
- Aggressive Environmental Monitoring Program
- Visual Data assessment tools – mapping, YOY incident rates
- Brutal honesty
- Cross functional teams for:
  - S&D
  - Hazard Analysis
  - Data Analysis

IDDBA

beaconpoint labs
Innovation Center
Kannapolis, North Carolina

OUR PROMISE

At beaconpoint labs, we promise to be fearlessly transparent in delivering accurate test results and a collaborative customer experience while advancing innovation in food safety testing.

The Heart of Beaconpoint Labs

At **beaconpoint Labs**, we stand apart in the world of nutrition testing. Fueled by frustration with the complexities of relying on multiple labs for comprehensive food safety & nutrition analysis, **we set out to revolutionize the industry.**

Our journey led us to the North Carolina Research Campus in Kannapolis, where our Center of Innovation resides. Here, in this collaborative scientific community, we share a common goal: to **empower human health through food safety nutrition and research**. We operate with unwavering purpose, ensuring unified and efficient operations through centralized systems that promote **communication and collaboration.** From day one, we've prioritized cutting-edge technology and a diverse range of analytical methodologies to guarantee **precision and thoroughness.** We are committed to offering complete transparency, from your sample's status to the dedicated scientist overseeing it, providing you with utmost confidence in our results and unrestricted access to the underlying data.

Driven by a deep-seated mission, we relentlessly pursue **scientific discovery** and innovation in the field of nutrition. Our passion lies in transparency, and we firmly believe that everyone has the right to know precisely what's in their food. We take pride in fostering **genuine customer partnerships**, guiding you through even the most challenging obstacles with a sense of **urgency, empathy, and unwavering dedication.**

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ISO-Accredited Service Portfolio & Quality You Can Trust

- Our laboratory's **core methods** are fully on-scope, ensuring compliance and reliability for all standard testing needs.
- At the same time, we maintain the **flexibility** to add additional methods as required, allowing us to adapt to evolving client needs, regulatory changes, or unique product specifications.
- Our **robust quality systems are critical** to our clients because it ensures the reliability, accuracy, and consistency of test results

Microbiology/ Pathogen Detection	Allergens	Nutritional Analysis & Labeling	Analytical Chemistry
Vitamins	Shelf-Life and Stabilty	Heavy Metals & Minerals	Residual Solvents
Contaminants			

Accredited Laboratory

A2LA has accredited

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Kannapolis, NC

for technical competence in the field of

Biological Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets the requirements of A2LA *R204 – Specific Requirements – Food and Pharmaceutical Laboratory Accreditation Program*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 26th day of December 2024.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 7034.02
Valid to January 31, 2026

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For the Accreditation Council
Certificate Number 7034.01
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For the tests to which this accreditation applies, please refer to the laboratory's Chemical Scope of Accreditation.

Looking Ahead: Future of Testing at Beaconpoint

We deliver more than accurate results — we provide fearless transparency, scientific integrity & Innovation, Speed with Precision & Meaningful Partnership & Support

FOCUS	FUTURE FORWARD....
Expanding Capabilities	Advanced technologies & flexible capacities to meet evolving industry needs
Predictable Performance	Faster, predictable turnaround times for seamless production times, efficient processes to create the very best customer experience
Uncompromising Quality	ISO Accredited systems to ensure precision & reliability
Collaborative Solutions	Aligning with business goals to navigate regulatory & operational challenges, understanding our internal/external customers

What's in your prevention tool box?

- Training that is reinforced by rewards for doing it right – don't walk past the water cooler
- Engaged workforce that sees something and says something
- Cross functional S&D not for cause
- Routine but random overnight sanitation reviews
- Brutal honesty
- Making it easy to do the right thing
- ***Company*** culture of "do the right thing"
- **Foundations of Listeria Control Short Course** — Meat Institute (Foundations of Listeria Control | Meat Institute

Listeria Equation

Controlled Traffic Patterns	+	GMPs	+	Sanitary Design: Equip. & Building	+	Clean, Dry, Uncracked Floors	+	Effective Sanitation

= Listeria Control

Food Safety isn't competitive!

Together we are stronger and smarter, produce a safer food supply and in the end, protect public health and maintain consumer confidence.

Thank you for your engagement and the difference you make in the future of food safety!

Scan me!

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Put Product Sampling in Perspective

One lot on hold of 100,000 1lbs packages = 45,359 kg

Ten 25g samples = 250 g = 0.250 kg, or 0.00055% of the food is actually tested

Statistically-Based Sampling

- If 10% of lot was the contaminated, and you test 10 samples:
  - 65% chance you would detect the contamination
  - 35% chance that a contaminated lot is released
  - You would have to test 30 units to reach 95% confidence of rejection
- If 0.5% contaminated
  - 5% chance you would detect the contaminant
  - 95% chance that a contaminated lot is released
  - You would have to test 600 units to reach 95% confidence of rejection

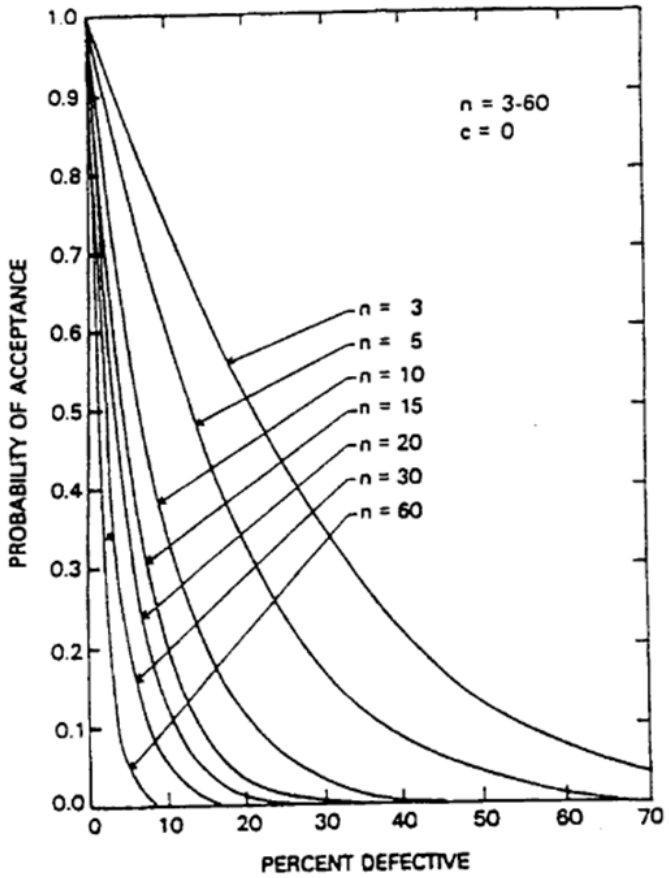

Figure 1. *Single sampling (two-class) attribute plans for sample sizes n = 3, 5, 10, 15, 20, 30, 60, and c = 0.*

Courtesy of Peter Taormina, Ph.D. Etna Consulting
Presented at the Food Safety Summit May 2025

Statistical Limitations of End Product Testing

Sampling Probability

Probability of Missing Sporadic Contamination by Product Sampling

Number of Samples Tested	% Contamination in Lot			
	10%	2%	1%	0.5%
3	73%	94%	97%	99%
10	35%	82%	90%	95%
60	<0.5%	30%	55%	74%
120	<0.5%	8.5%	30%	55%
180	<0.5%	2.6%	16%	41%
240	<0.5%	0.8%	9%	30%

Courtesy of Peter Taormina, Ph.D. Etna Consulting
Presented at the Food Safety Summit May 2025