

Intro to Environmental Sampling, Investigation, Data Analysis and Process Control

October 2023

NAMI NORTH AMERICAN
MEAT INSTITUTE



The battle with this organism has caused more change to producers of RTE deli meat products than any one single factor or event in the last 40 years. Our scars are numerous and deep.

John Butts
October 2015

FOOD SAFETY BY DESIGN

AWARENESS ENLIGHTENMENT PREVENTATIVE PREDICTIVE



NAMI NORTH AMERICAN
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For the People, Animals
& Climate of Tomorrow

Industry History

March 2000

- During Bruce Tompkin's Armour-Swift-Eckrich copacker workshop, the concept of the AMI Listeria Intervention and Control Workshop was developed

November 2000

- **First AMI Workshop**

- Founders:

- Bruce Tompkin - Armour Swift Eckrich
- Bruce Cords - Ecolab
- Doug Craven - Hormel
- Gene Bartholomew – John Morrell
- Tim Freier - Silliker
- John Weisgerber - Oscar Mayer
- John Butts - Land O' Frost

AMI Staff

Randy Huffman & Kim Rice

- Consensus in methods and Best Practices was attained

October 2001

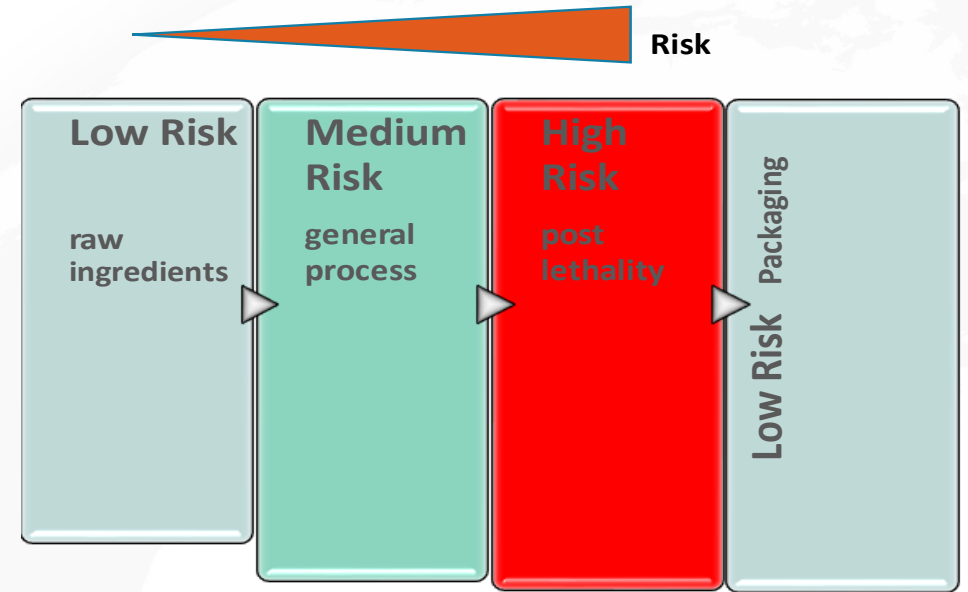
- AMI Board declared "Food Safety Not Competitive"



History

2001 to today

- **Elimination of single growth niches produced new levels of control**
 - Drove robust management practices resulting from Lesson's Learned (PEC & infrastructure)
 - Cooking/pasteurization & gassing of equipment became commonplace
 - Resulted in major hyenic designs Improvements for new & legacy designs (equipment & infrastructure)
- **More aggressive EMP sampling was deployed**
- **Spread of organisms from growth niches became more understood:** resulted in improvements with cross-functional GMP & sanitation practices, etc.
- **Benefits of Dry were realized:** floors, HVAC -Pressurized air / humidity control
- **Physical separation of RTE areas became common place (zoning):** CI's made with RTE hurdles & traffic controls, primary & secondary packaging separation, dedicated cross functional resources & tools



- Flow of air
- Water
- People
- Product
- Packaging
- Trash & Recycling
- Barriers/hurdles are in place to prevent cross contamination

History

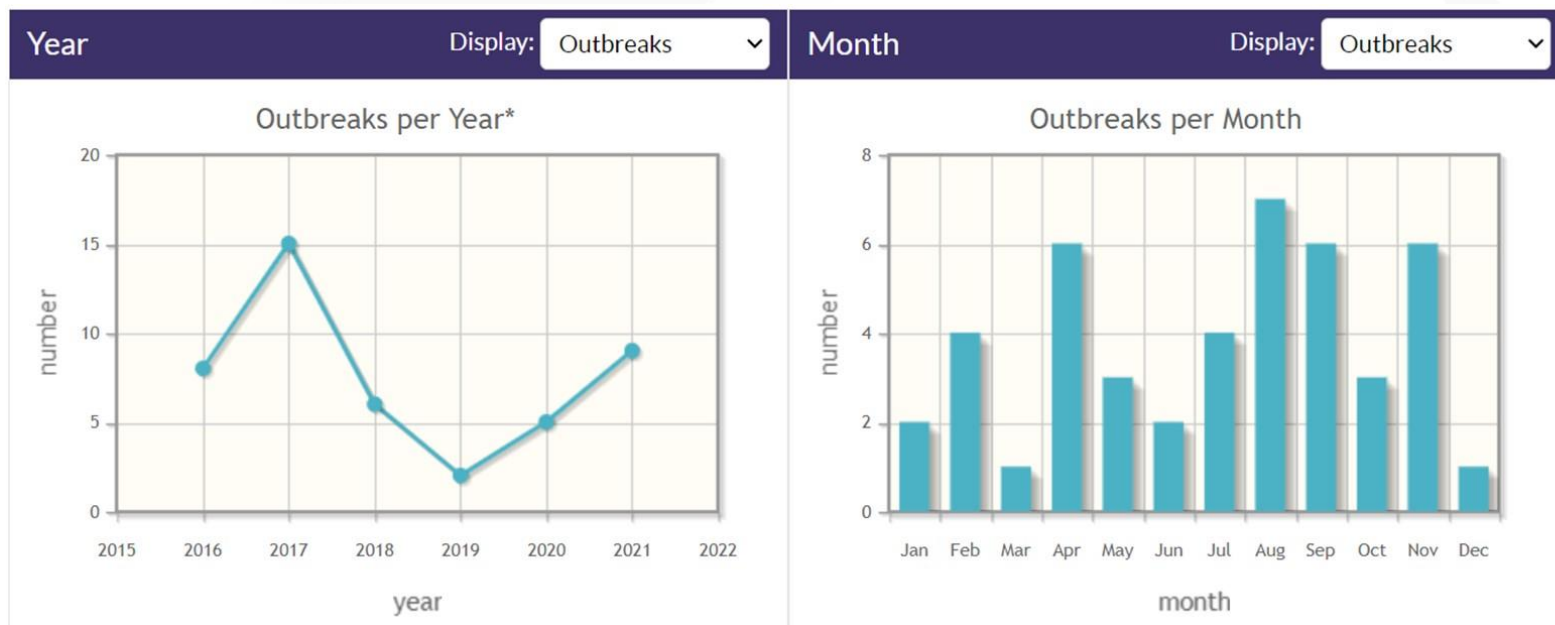
2001 to today

DNA linkage evolves: Whole Genome Sequencing (WGS) & Data uploaded in global GenomeTrakr

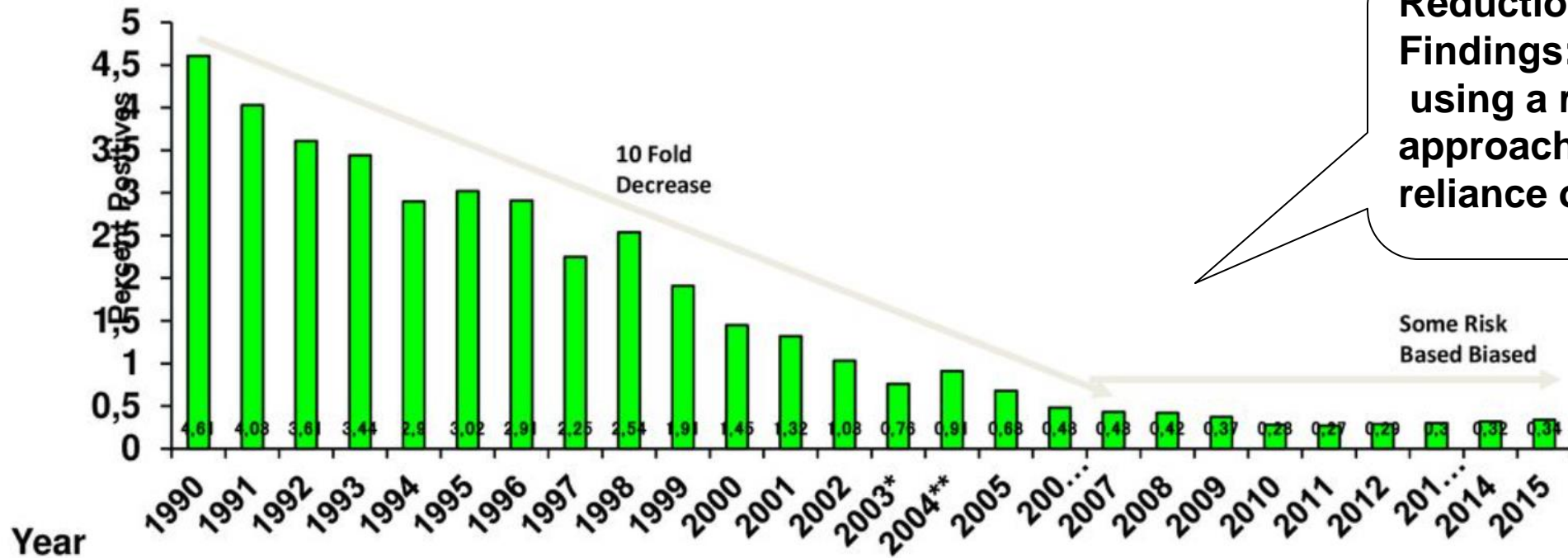


No reported illnesses or outbreaks from USDA inspected meat plants: 2003-2018

2016-2021 food industry as a whole (FDA & USDA: CDC listeria data):



FSIS Regulatory Testing for *Listeria monocytogenes* in RTE Meat and Poultry Products



Reduction of Lm product Findings: support's using a robust EMP approach versus over reliance on product testing

Some Risk Based Biased

Legal Lessons Learned

- Early in the game we learned:
 - *“What you don’t know can and will hurt you.”*
 - *“Keep your head stuck in the sand and you will get your head cut off”*

Dennis Johnson – Olsson Frank & Weeda on Listeria

- This continues to be reinforced with every ratcheting of the Food Safety regulations and major recall/outbreak
 - FDA Listeria monocytogenes recalls announced on Oct 23:
 - Frozen & refrigerated cooked lobster meat
 - Bagged Collard Greens

We've all heard:

You are not sampling
hard enough, if you are
not finding positives

“Where are the positives you are wanting to find?”



- *Positive samples in your routine monitoring program indicate that your pathogen control program is not working.*



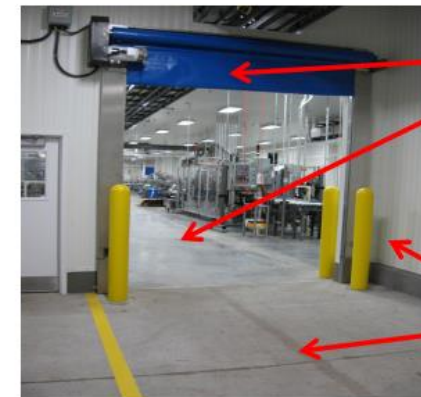
Operational Definition of Sampling Terms

Verification Monitoring Program

- A routine program that verifies the effectiveness of the plants' ability to prevent product contamination from an environmental pathogen.
 - Includes sampling of Product, Zone 1, 2 , 3, & 4 environmental sites in the RTE area
 - Sampling Zone 4 sites: helps to establish if further upstream controls are needed to reduce RTE CC risk
 - Used for regulatory compliance
 - Part of the establishment's Food Safety System: HACCP & SSOP program
 - Measures & Verifies the effectiveness of the Preventive Controls deployed. **Examples:** Plant zoning / separation, hurdle controls, Sanitation & GMP practices



Environment Zone Examples



Zone 3 Examples:
• Roll up doors
• Walls, Floors, Drains inside GMP room

Zone 4 example:
areas outside the GMP food manufacturing room



“

WHERE ARE THE GOOD POSITIVES WE WANT TO FIND?

”

We will examine sampling program designs to see if there are some answers in latter presentations



Listeria Equation

Controlled
Traffic
Patterns + GMP's + Sanitary
Design
Equip &
Building + Clean Dry
Uncracked + Effective
Floors Sanitation
Procedures

= **Listeria Control**

Seek & Destroy Maturity Model

Evolution of Listeria Control in Processed Meats

Stage 1 Doubt	Stage 2 Awareness <i>(Know of)</i>	Stage 3 Enlightenment <i>(React to)</i>	Stage 4 Preventive	Stage 5 Predictive
<p><i>No testing or only testing as required to meet regulatory requirements</i></p>	<p><i>Initially sampled finished product, then some contact surfaces and environmental sites</i></p> <p><i>Environmental sampling and corrective action resulted in giving the drains to Listeria.</i></p>	<p><i>Growth niches recognized in both equipment and facilities</i></p>	<p><i>Interventions developed and applied to manage growth niches. Sanitary design applied to eliminate.</i></p>	<p><i>Comprehensive indicator site process controlling facility and equipment growth niches combined with hurdles and barriers to control transfer pathways.</i></p> <p><i>Indicator sites used to measure risk and signal when to apply intervention or strengthen hurdle</i></p>

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Validation of “*Best Practices*”

Seek and Destroy Process

- The Seek and Destroy Process is a systematic approach to finding sites of persistent strains (niches) in food processing plants, with the goal of either eradicating or mitigating effects of these strains.
- We cannot fully eliminate Lm from the RTE environment, but we can deploy preventive practices that enable a high level of control of Listeria species.



Questions?