

# Interpretation Complications:

You've Got A Positive? Now What?

You didn't get any positives! Why not  
and what might that mean?

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Adaptation of a presentation by  
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# Pathway from Result to Action

Pooled Results

Interpretation  
within Context  
of Sample

Mitigation and  
Re-sampling

# You've Got a Positive, Now What?

- Gather Info:
  - When: Pre-Operative, During Operations?
    - Day/Shift/Time
  - Which Zone(s)?
    - FCS or NFCS?
  - Is it the 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, or 4<sup>th</sup> positive?
    - Over what period of time?
  - What Was Being Produced or Happening in Area?
    - Does Product Support Growth?

Notify! Take Charge!

- Take charge & communicate
  - Who needs to know?
    - Food safety?
    - Sanitation?
    - Operations?
    - Maintenance?
    - Management?



# Managing findings, corrective actions

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- A facility that finds an environmental pathogen during environmental monitoring:
  - ✓ conducts microbial testing of surrounding surfaces and areas to determine the potential source of the contamination
  - ✓ cleans/sanitizes the contaminated surfaces/areas
  - ✓ conducts additional microbial testing to determine whether the contamination has been eliminated





# Follow up positive

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- ✓ If the organism is found on retest, the facility
- ✓ generally takes more aggressive corrective actions
  - ✓ more intensified cleaning and sanitizing,
  - ✓ including dismantling equipment, scrubbing surfaces, and heat-treating equipment parts

# You've Got a Positive, Now What?

- If *Listeria* spp. presumptive positive, confirm?
  - What does “presumptive” mean?
  - What does “confirm” mean?
- If *Listeria monocytogenes* positive, confirm?
- If *Listeria monocytogenes*, sequence/type it?
  - How?

# You've Got a Positive, Now What NOT to Do?

- Nothing / Ignore
- Penalize the swabber, or anyone else who helped hunt down the positive
  - Intentionally or unintentionally
- Wander Down the Path of Laboratory Error





# How do you know your sampling plan is working?

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## Prevalence data for 7 cheese plants – routine sampling

Plant ID	Prevalence (from routine)
A	5.1% (34/664)
E	11% (88/795)
F	<0.3% (0/334)
G	9.1% (19/209)
H	23% (24/106)
I	0.4% (1/222)
J	0.9% (1/106)



## **“Validation” of the sampling plan**

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- Completed after min. 6 months of sampling
- Routine sampling
  - under supervision
- Additional sample sites
  - performed by individuals with experience in environmental sampling who did not take the routine samples
- Sites were selected from zones 2-4



## “Validation” results

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Plant ID	Prevalence (from routine)	Prevalence (from “validation”)
A	5.1% (34/664)	1.3% (2/150)
E	11% (88/795)	10% (6/60)
F	<0.3% (0/334)	6.0% (3/50)
G	9.1% (19/209)	2.4% (2/85)
H	23% (24/106)	4% (2/50)
I	0.4% (1/222)	<2.0% (0/50)
J	0.9% (1/106)	14% (7/50)

# You Didn't Get **Any** Positives! Why Not and What Might That Mean?

- Reassess Sampling
  - Frequency, Timing, Locations, Technique, Incentives
- Sample Methods
  - Validated for Your Product?
  - Span of Time Between Sample and Enrichment for Assay
  - Compositing
  - Neutralizing Buffer
  - Background Microflora

# Understand Your Laboratory Methods

Microflora of food samples can be complex, diverse, and dynamic. May have inhibitory and interfering substances.

These factors may affect rapid detection and identification of target pathogens.

Methods should be validated in food products to be tested.

Method capabilities and limitations vary. One method may not apply to all situations.

# pH of Collection Buffers Mixed with Different Types of Sanitizers

Neutralizing Solution	1:400 Dilution of Vortexx (PAA + Octanoic)	1:400 Dilution of Whisper V (QAC)	1:400 Dilution of Tsunami 200 (PAA)
Neutralizing Buffer	4.3	7.5	3.8
Lethen Broth	4.7	6.8	4.4
D/E Neutralizing Buffer	5.3	7.5	4.8
HiCap Neutralizing Broth	6.7	7.2	6.5

Adapted from N.R. Ward, 2013. Intl Bioproducts

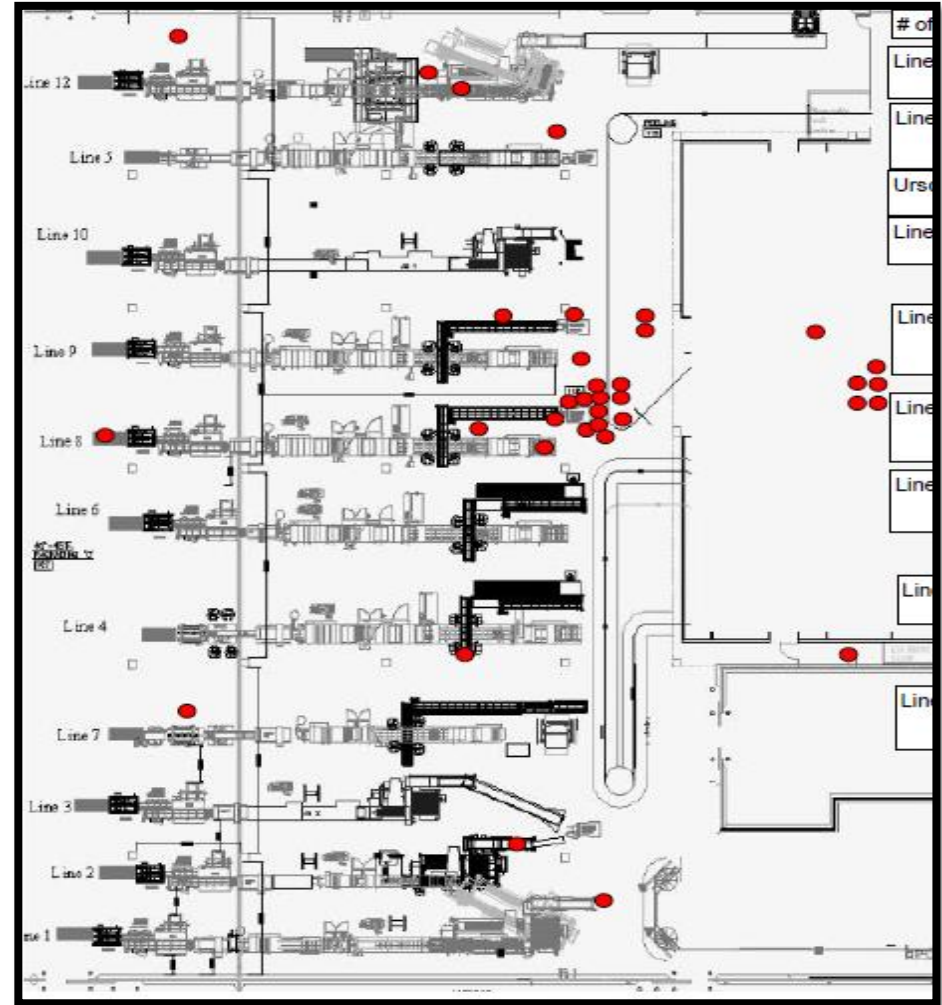


We're in the era of "Big Data"

# Software and Data

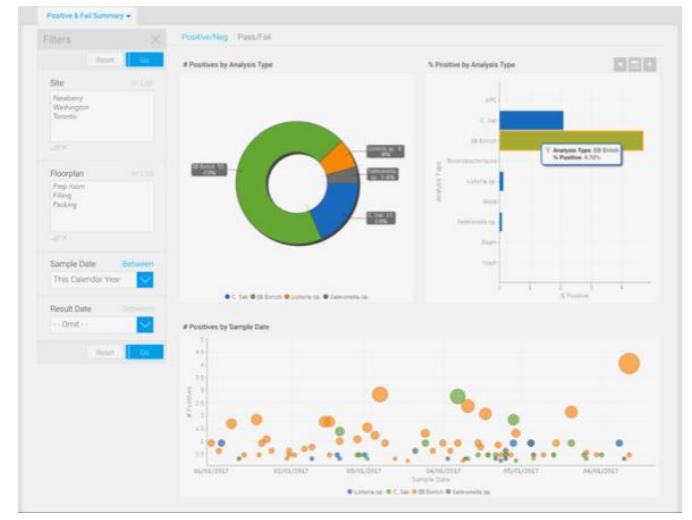
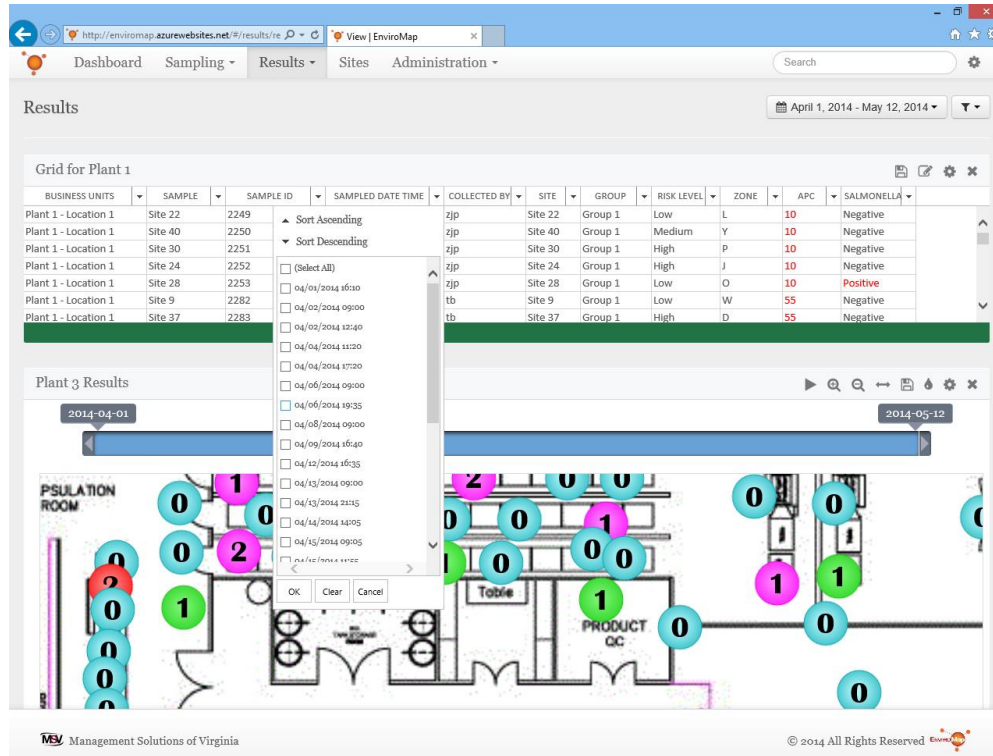
# Data Cataloging & Management

- Upload CAD design or map of plant
- Define locations on map
  - Location in plant (sections)
  - Pack lines
  - Drain numbers
- Geotrack sampling data

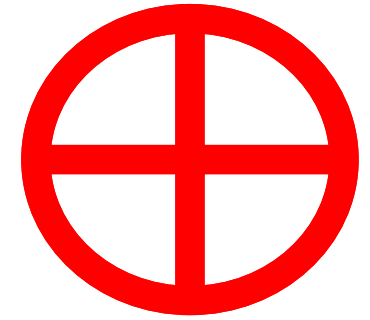




# Many Software Options



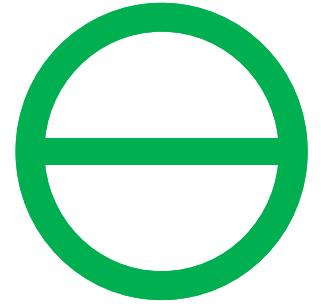
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# SUMMARY

- You've Got a Positive, Now What?
  - Understand the Context
  - Communicate
  - Sample Surrounding Areas → Clean & Sanitize → Additional Sampling → Escalate (“Seek & Destroy”)
  - Document Response
  - Demonstrate Control

# SUMMARY



- You didn't get any positives! Why not and what might that mean?
  - You're good
    - ...or
  - Need to change Frequency, Timing, Locations, Incentives, Technique
  - Validate Method