



# 67th Annual Food Safety Conference & Social Mixer

## Day 1



September 30, 2024  
October 1, 2024



Bellvue Manor, 8083 Jane St  
Concord, ON





ONTARIO FOOD PROTECTION ASSOCIATION

# Registration & Breakfast

7:30am – 8:30am



# Thank you to our sponsors !

## Elite



## Platinum



## Diamond



## Gold



## Silver



## Micro





# Thank you to our exhibitors!





# Welcome One & All

Marin Pavlic,  
OFPA Vice President

- Welcome Address
- Membership Information



Network Name: Bellvue Manor Guest  
Password: grandsalon







## Membership incentives

- Members receive FREE access to monthly webinars
- Newsletter, monthly e-blast & yearly awards
- Members-only access – Articles, presentations and past events
- 10% Discount code for members and sustaining corporate members.





# Emerging Trends and Challenges in Food Safety Regulations - Strategies for Compliance

**TIM JACKSON**

Senior Science Advisor for Food Safety and Applied Nutrition, FDA and  
President of the International Association for Food Protection



# Trends and Challenges in Food Safety Regulations: Strategies for Compliance

Tim Jackson, Ph.D.

*Senior Science Advisor for Food Safety*

Office of Food Safety

Center for Food Safety and Applied Nutrition

Ontario Food Protection Association Annual Meeting

September 30, 2024



# Agenda

- US Regulatory Framework
- Key developments in US regulation
- Genetic profile expansion and integration
- FDA FSMA Rule and Guidance
- Examples of new rules and standards
  - Agricultural Water Rule
  - Food Traceability Rule
  - Closer to Zero Initiative
- Strategies for compliance
  - Root Cause Analysis
  - Data Sharing
  - IAFP, OFPA and collaboration



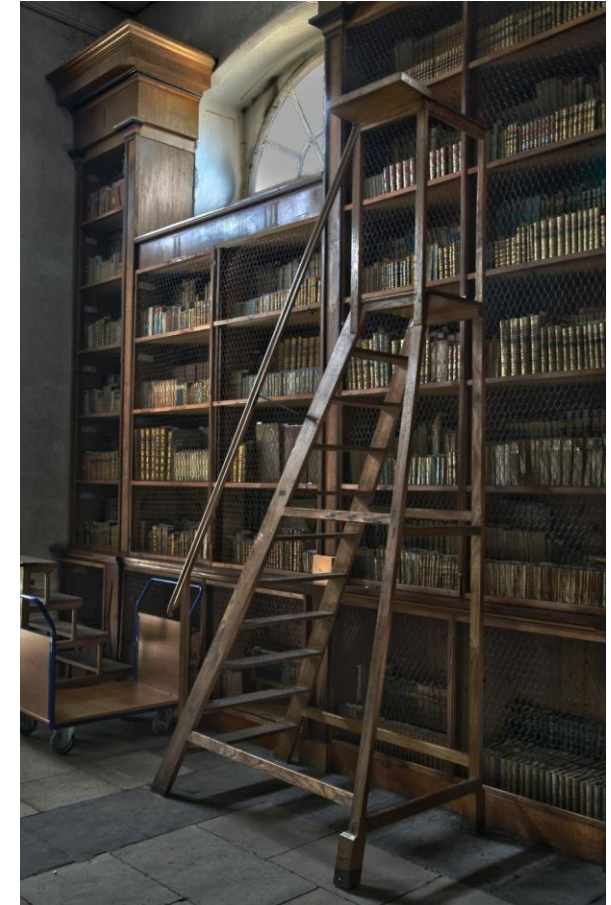


# Regulatory Authorities - US

## *Authorities that establish U.S. food safety management systems*

Key components of the [Food Safety Modernization Act](#) include preventive controls, inspection and compliance, imported food safety, response (mandatory recall authority for all food products), and enhanced partnerships. HHS FDA performs its public health duties pursuant to some of the following statutory authorities. This is not an exhaustive list, but illustrates the broad authority of FDA:

- [Federal Import Milk Act \(1927\)](#)
- [CFR - Code of Federal Regulations Title 21](#)
- [Federal Food, Drug, and Cosmetic Act of 1938, as amended](#)
- [Public Health Service Act \(1944\)](#)
- [Fair Packaging and Labeling Act \(1966\)](#)[Fair Packaging and Labeling Act: Regulations Under Section 4 of the Fair Packaging and Labeling Act](#)
- [Infant Formula Act of 1980, as amended](#)
- [Nutrition Labeling and Education Act of 1990](#)
- [Dietary Supplement Health and Education Act of 1994](#)
- [Public Health Security and Bioterrorism Preparedness and Response Act of 2002 \(the Bioterrorism Act\) \[H.R.3448 - 107th Congress \(2001-2002\): Public Health Security and Bioterrorism Preparedness and Response Act of 2002](#)





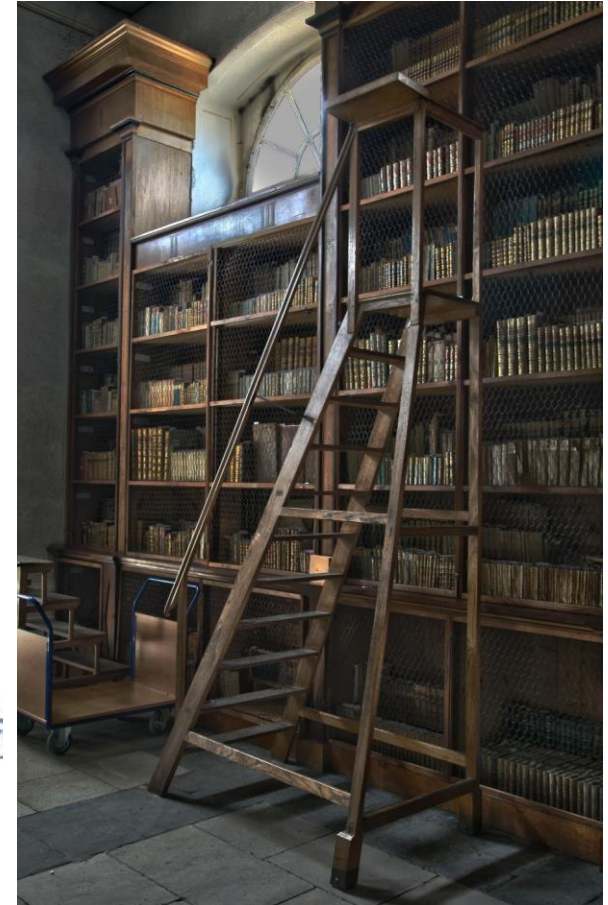
# Regulatory Authorities - US

Three FDA programs are managed as cooperative agreements with regulatory partners:

- [FDA National Shellfish Sanitation Program](#)
- [FDA Grade "A" Milk Safety Program](#)
- [Retail Food Protection](#)

USDA FSIS Authorities are established in the Acts listed below:

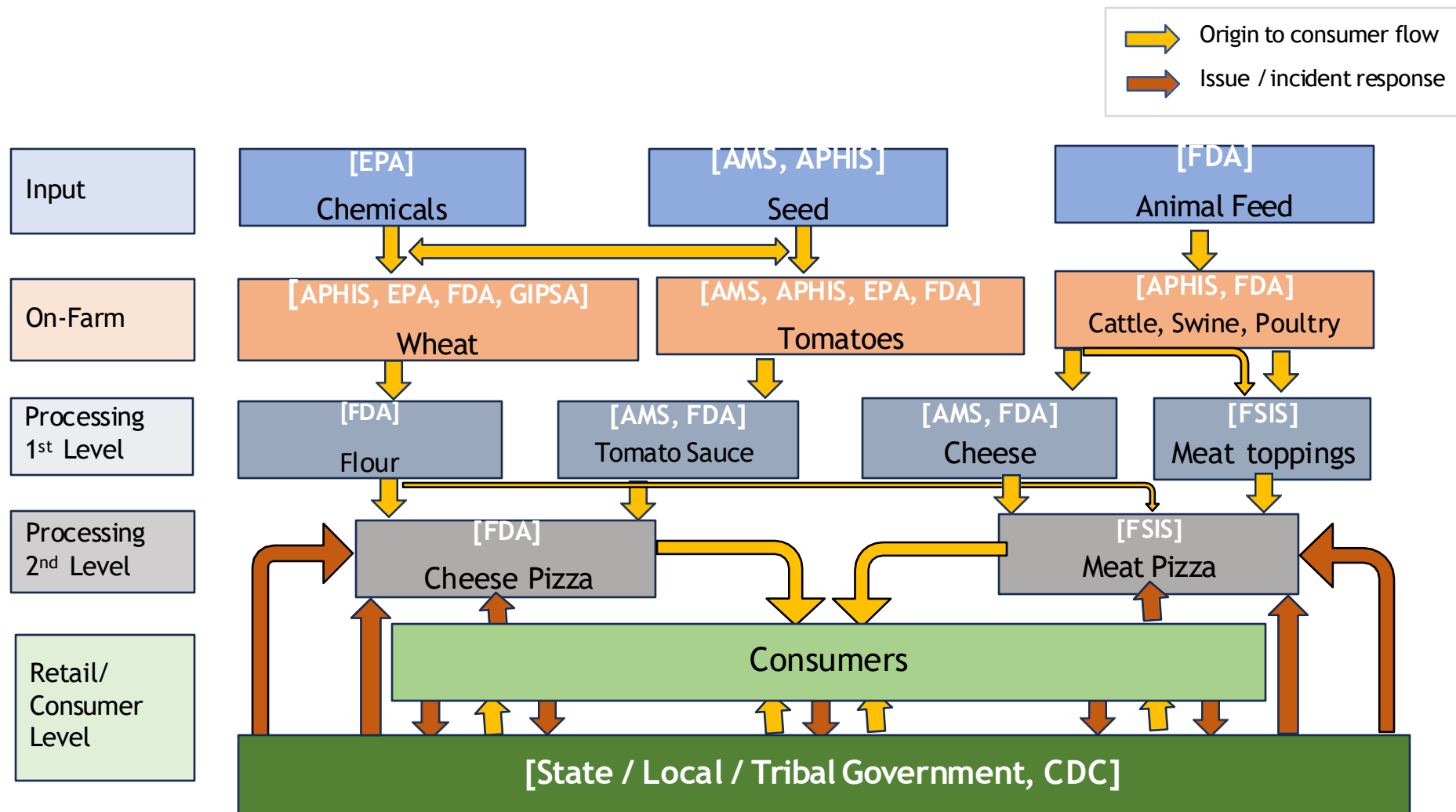
- [Federal Meat Inspection Act \(1906\)](#)
- [Agricultural Marketing Act \(1946\)](#) (selected sections)
- [Poultry Products Inspection Act \(1957\)](#)
- [Egg Products Inspection Act \(1970\)](#)
- <https://www.aphis.usda.gov/sites/default/files/aphis-biorisk-management-manual.pdf>
- [eCFR :: Title 7 of the CFR -- Agriculture](#)





# USG agencies work together to ensure food safety: Pizza case study

(Derived from GAO Report T-RCED-99-256 and modified to suit JEE presentation)

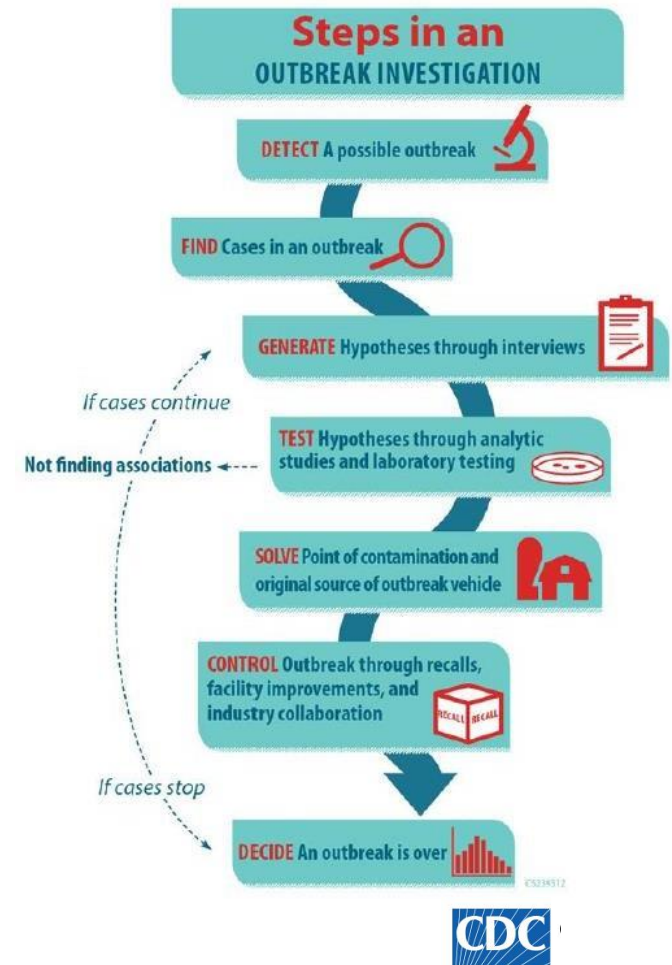


**AMS** = USDA Agricultural Marketing Service; **GIPSA** = Grain Inspection Packers, and Stockyards Administration



# Identifying and responding to interstate outbreaks

Outbreak investigation and response	Stakeholders engaged
Detect a possible outbreak: <ul style="list-style-type: none"> <li>- Illness reports</li> <li>- Identification of related strains</li> <li>- Consumer complaints</li> <li>- Information from sampling programs</li> </ul>	CDC, State, local and tribal partners; FDA, FSIS, DOD, international partners
Define and find cases of illness	CDC, State, local and tribal partners; FDA, FSIS, DOD
Generate hypotheses about outbreak sources	CDC, FDA, FSIS, State, local and tribal partners
Test hypotheses and confirm the outbreak source	CDC, State, local and tribal partners; FDA, FSIS
Conduct traceback to determine vehicle	FDA, FSIS
Conduct root cause investigation	FDA, FSIS, State, local and tribal partners
Stop the outbreak	CDC, FDA, FSIS, State, local and tribal partners
Decide the outbreak is over	CDC
Conduct follow up actions with firm (s)	FDA, FSIS, State, local and tribal partners
Capture learnings from investigation	FDA, FSIS, CDC
Determine needed ongoing investigation and prevention activities	FDA, FSIS



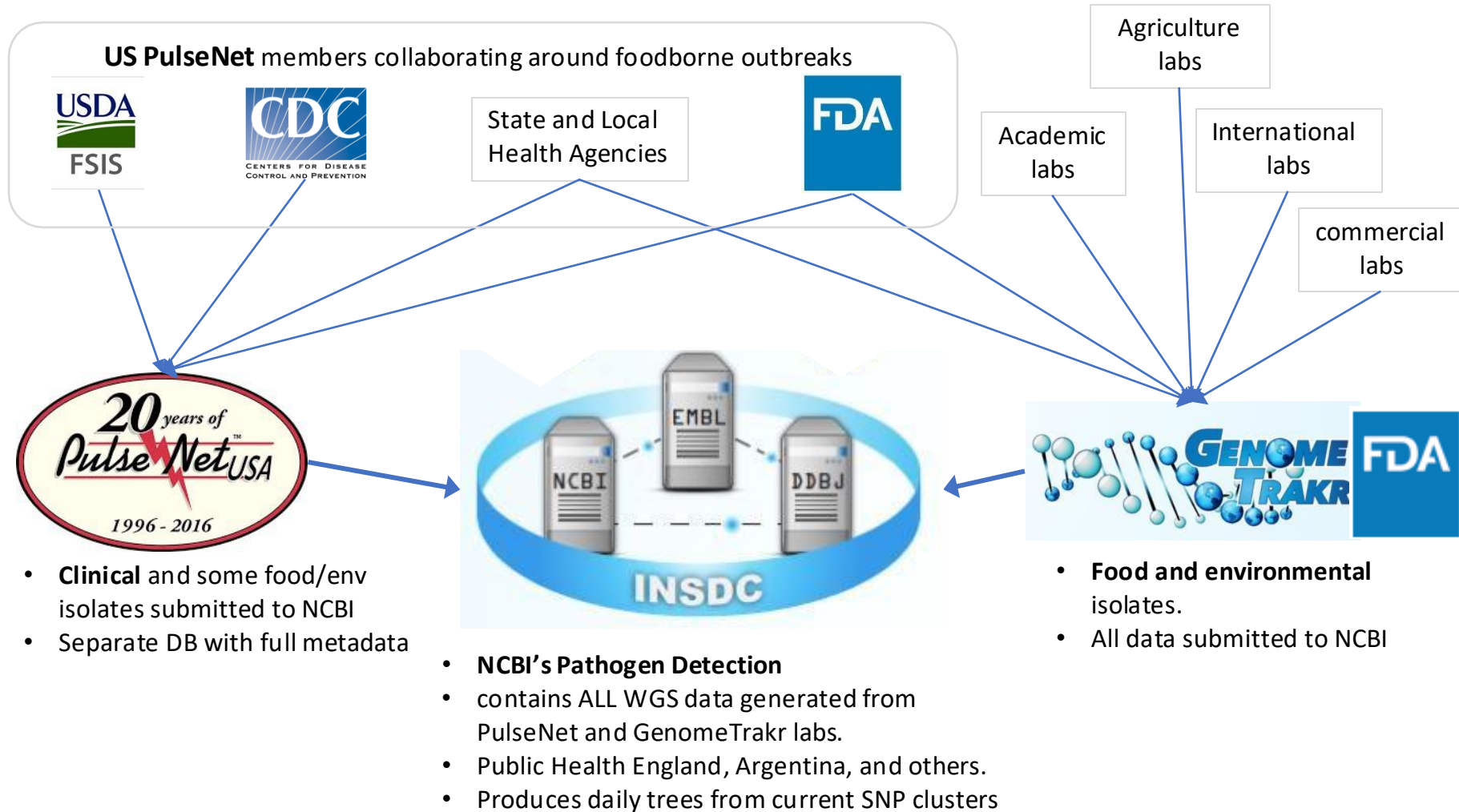


# Key developments in US regulation

- In 2011, HHS FDA **Food Safety Modernization Act** was signed into law and augmented numerous existing laws and regulations
- To reduce *Salmonella* (a major foodborne pathogen), USDA FSIS tightened its **Salmonella performance standards** and is currently working to further improve the safety of poultry and other products
- USG entities continue to improve their capacity to characterize pathogens and its **Whole Genome Sequencing** capability resulting in rapid outbreak detection.
  - Since 1996, HHS CDC has greatly improved outbreak detection through marked improvements in **PulseNet**, a national laboratory network that consists of more than 70 federal, state and local laboratories for genomic detection and outbreak identification (*Listeria*, *Campylobacter*, *E. coli*, *Salmonella*, *Shigella* and *Vibrio*)
- HHS, USDA and other federal agencies formed the **Interagency Collaboration for Genomics in Food and Feed Safety (Gen-FS)** to further strengthen U.S. efforts to monitor, identify, investigate and efficiently resolve foodborne illness and outbreaks.
  - Gen-FS provides oversight and guidance for harmonized use of WGS technology for detection, characterization, source identification, interpretation and public data-sharing.



# US Surveillance Network

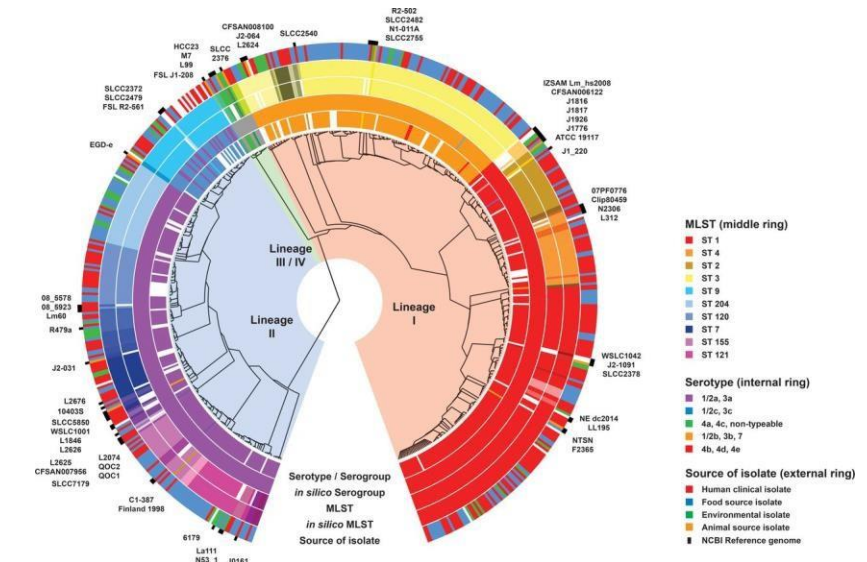
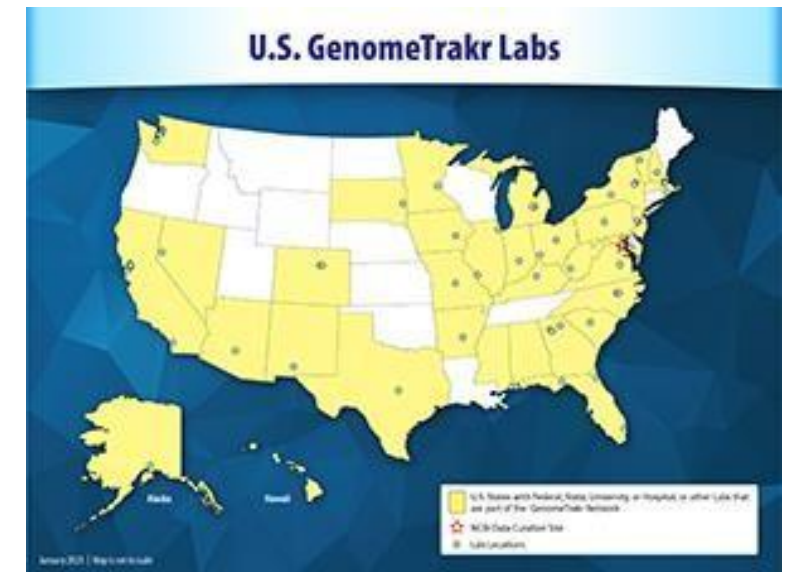




# New Era of Smarter Food Safety

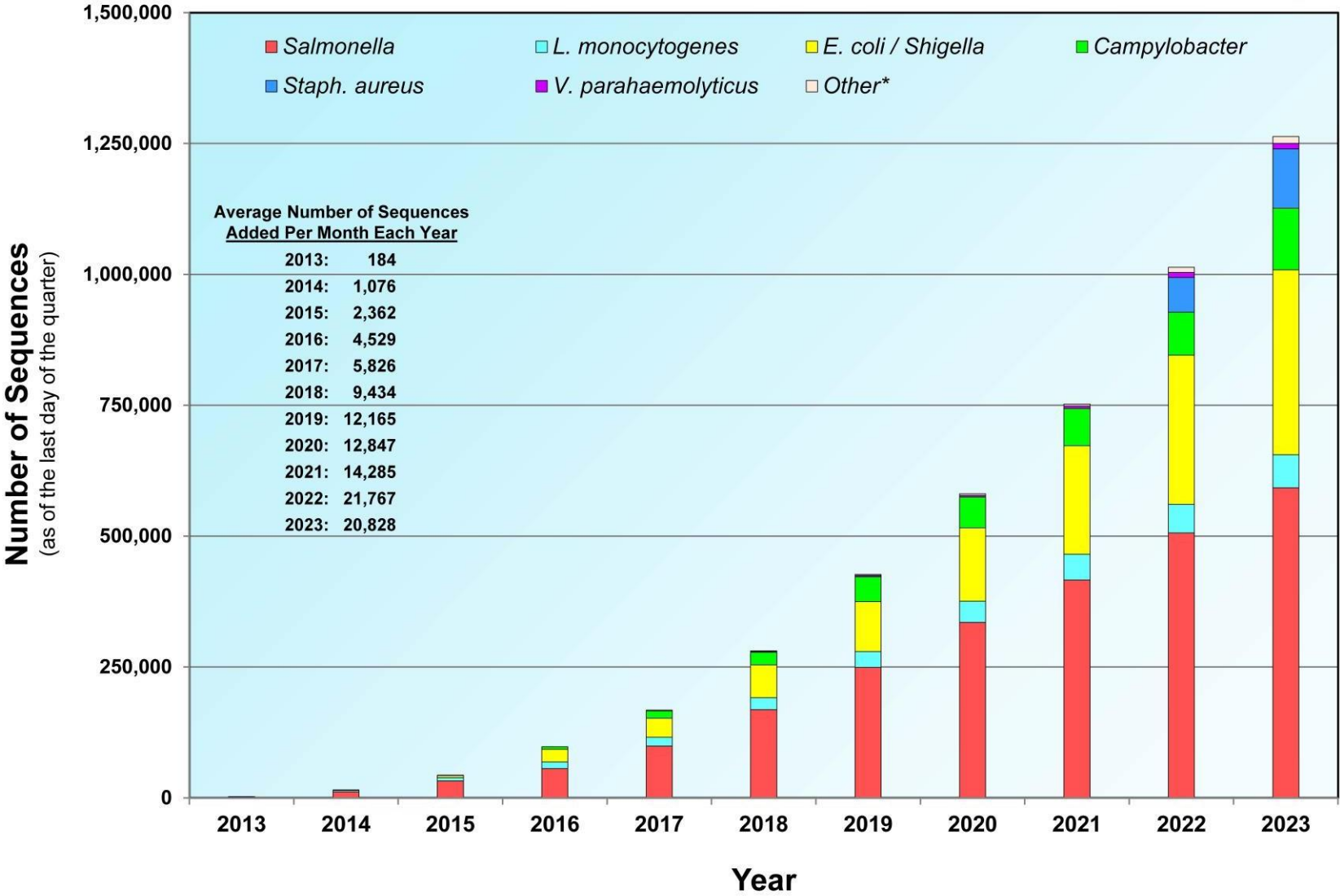
## GenomeTrackr and Whole Genome Sequencing Objectives

- Work with international, federal, state and academic partners to **increase the number of laboratories that can submit sequences** of parasites, pathogens and viruses isolated from food samples via FDA's GenomeTrakr.
- Explore barriers and mechanisms to **better leverage industry food testing results** to identify possible outbreaks
- Educate **foreign partners** about WGS and value of data exchange, obtain commitments to share data
- Increase awareness and training to facilitate opportunities to speed whole genome sequencing of pathogens by **public and private labs**.





# Pathogens uploaded to NCBI PD



First sequences uploaded in February 2013

\* Other pathogens: *Cronobacter*, *V. vulnificus*, *C. botulinum*, *C. perfringens*, and *Bacillus cereus* group



# Food Safety Modernization Act

## Preventive Controls for Human Food

- Training and qualified Individual
- Current Good Manufacturing Practices
- Food Safety Plan
  - Hazard Analysis
  - Preventive Controls
    - Process, Sanitation, Allergen, Other
  - Oversight of Preventive Controls
    - Monitoring, corrections, corrective actions, verification
  - Supply Chain Program
  - Recall Plan





# FSMA main rules

[FSMA Rules & Guidance for Industry | FDA](#)



- Produce Safety Rule
  - Pre-harvest agricultural water
- Accredited Third-Party Certification
- Food Traceability
- Foreign Supplier Verification for importers of Foods for Humans and Animals
- Laboratory Accreditation for Analysis of Foods
- Mitigation Strategies to Protect Food Against Intentional Adulteration
- Preventive Controls for Human Foods
- Preventive Controls for Animal Foods
- Sanitary Transportation of Human and Animal Foods



# FSMA Other Rules

[FSMA Rules & Guidance for Industry | FDA](#)

- Current Good Manufacturing Practices and Hazard Analysis and Risk-Based Preventive Controls for Human Food
- Current Good Manufacturing Practices and Hazard Analysis and Risk-Based Preventive Controls for Food for Animals
- User Fee Program for Accreditation of Third-Party Auditors / Certification Bodies
- Amendments to Reportable Food Registry Provisions
- Information Required in Prior Notice of Imported Foods
- Criteria Used to Order Administrative Detention of Food for Human or Animal Consumption



# FSMA Guidance (n=73)

## [FSMA Rules & Guidance for Industry | FDA](#)

Title	Issued Date
Guidance for Industry: <a href="#">Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption: What You Need to Know About the FDA Regulation - Small Entity Compliance Guide</a> Docket Number: <a href="#">FDA-2011-N-0921</a>	2024/09
Draft Guidance for Industry: <a href="#">Hazard Analysis and Risk-Based Preventive Controls for Human Food: Revised Introduction and Appendix 1</a> Docket Number: <a href="#">FDA-2016-D-2343</a>	2024/01
Guidance for Industry: <a href="#">Standards for the Growing, Harvesting, Packing, and Holding of Sprouts for Human Consumption</a> Draft Guidance for Industry: <a href="#">Standards for the Growing, Harvesting, Packing, and Holding of Sprouts for Human Consumption</a> Docket Number: <a href="#">FDA-2017-D-0175</a>	2023/09
Draft Guidance for Industry: <a href="#">Hazard Analysis and Risk-Based Preventive Controls for Human Food: Chapter 11: Food Allergen Program &amp; Chapter 16: Acidified Foods</a> Docket Number: <a href="#">FDA-2016-D-2343</a>	2023/09
Guidance for Industry: <a href="#">Temporary Policy Regarding Preventive Controls and FSVP Food Supplier Verification Onsite Audit Requirements Due to COVID-19</a> Docket Number: <a href="#">FDA-2020-D-1108</a>	2023/07
Guidance for Industry: <a href="#">Temporary Policy Regarding Accredited Third-Party Certification Program Onsite Observation and Certificate Duration Requirements Due to COVID-19</a> Docket Number: <a href="#">FDA-2020-D-1304</a>	2023/07
Guidance for Industry: <a href="#">Requirements for Additional Traceability Records for Certain Foods: What You Need to Know About the FDA Regulation; Small Entity Compliance Guide</a> Docket Number: <a href="#">FDA-2023-D-1336</a>	2023/05





# FSMA Final Rule on Pre-Harvest Agricultural Water

Subscribe to Email Updates

Share

Post

LinkedIn

Email

Print

- Agricultural water assessment
- Corrective and mitigation measures
- Required management review of pre-harvest water assessments





# Overview of Final Rule

- Requires comprehensive, systems-based assessments at least once per year that focus on key factors for contamination by pre-harvest agricultural water:
  - Agricultural water systems
  - Water use practices
  - Crop characteristics
  - Environmental conditions
  - Other factors (including testing in certain circumstances)
- Requires timely action based on risk and includes new requirement for expedited mitigation for certain hazards
- Reflects new science demonstrating limitations of the previous testing requirements and findings from several produce-related outbreaks
- No changes for sprouts or harvest/post-harvest ag water



# Factors impacting water risk

Factors	Description
Agricultural water system(s)	<ul style="list-style-type: none"> <li>• The location and nature of the water source (such as whether it is ground water or surface water)</li> <li>• The type of water distribution system (such as whether it is open or closed to the environment)</li> <li>• The degree to which the system is protected from possible sources of contamination, including: <ul style="list-style-type: none"> <li>- other users of the water system</li> <li>- animal impacts (such as from grazing animals, working animals, and animal intrusion)</li> <li>- adjacent and nearby land uses related to animal activity, the application of biological soil amendments of animal origin (BSAAOs), or the presence of untreated or improperly treated human waste</li> </ul> </li> </ul>
Agricultural water practices	<ul style="list-style-type: none"> <li>• The type of application method (such as overhead sprinkler or spray, drip, furrow, flood, and seepage irrigation)</li> <li>• The time interval between the last direct application of agricultural water and harvest of the covered produce (other than sprouts)</li> </ul>
Crop characteristics	<ul style="list-style-type: none"> <li>• Susceptibility of the covered produce to surface adhesion or internalization of hazards</li> </ul>
Environmental conditions	<ul style="list-style-type: none"> <li>• Frequency of heavy rain or extreme weather events that may impact the agricultural water system (such as by stirring sediments that may contain human pathogens) or that may impact or damage produce. Damage can increase the susceptibility of produce to contamination.</li> <li>• Air temperatures</li> <li>• Sun (UV) exposure</li> </ul>
Other relevant factors	<ul style="list-style-type: none"> <li>• Including, if applicable, results of pre-harvest agricultural water testing to inform the assessment</li> </ul>



# The FSMA Final Rule on Requirements for Additional Traceability Records for Certain Foods (Food Traceability Rule)

April 4, 2023





# What will the Food Traceability Rule require?



- Persons who manufacture, process, pack, or hold foods on the Food Traceability List
- Covers the entire food supply chain
- Includes both foreign and domestic entities





# Food Traceability List

Cheese (made from pasteurized milk), fresh soft or soft unripened

Cheese (made from pasteurized milk), soft ripened or semi-soft

Cheese (made from unpasteurized milk), other than hard cheese

Shell eggs

Nut butters

Cucumbers (fresh)

Herbs (fresh)

Leafy greens (fresh)

Leafy greens (fresh-cut)

Melons (fresh)

Peppers (fresh)

Sprouts (fresh)

Tomatoes (fresh)

Tropical tree fruits (fresh)

Fruits (fresh-cut)

Vegetables (fresh-cut)

Finfish (histamine-producing species) (fresh, frozen, and previously frozen)

Finfish (species potentially contaminated with ciguatoxin)  
(fresh, frozen, and previously frozen)

Finfish, species not associated with histamine or ciguatoxin  
(fresh, frozen, and previously frozen)

Smoked finfish (refrigerated, frozen, and previously frozen)

Crustaceans (fresh, frozen, and previously frozen)

Molluscan shellfish, bivalves (fresh, frozen, and previously frozen)

Ready-to-eat deli salads (refrigerated)



# CTE and KDE Framework

*The role of the entity in the supply chain defines the data it must keep and share*

## Critical Tracking Events

Harvesting, Cooling, Initial Packing, First Land-based Receiving, Shipping, Receiving, and Transforming are Critical Tracking Events (CTEs) for which records would be required.

## Key Data Elements

Required records would need to contain specific Key Data Elements (KDEs). The KDEs would depend on the CTE being performed.

**The KDEs required would vary depending on the CTE that is being performed.**

The records required at each CTE would need to contain and link the KDEs to the traceability lot.



# Traceability Lot Code (TLC)



**Traceability Lot Code  
(TLC)**



**Traceability Lot Code  
Source (TLC Source)**

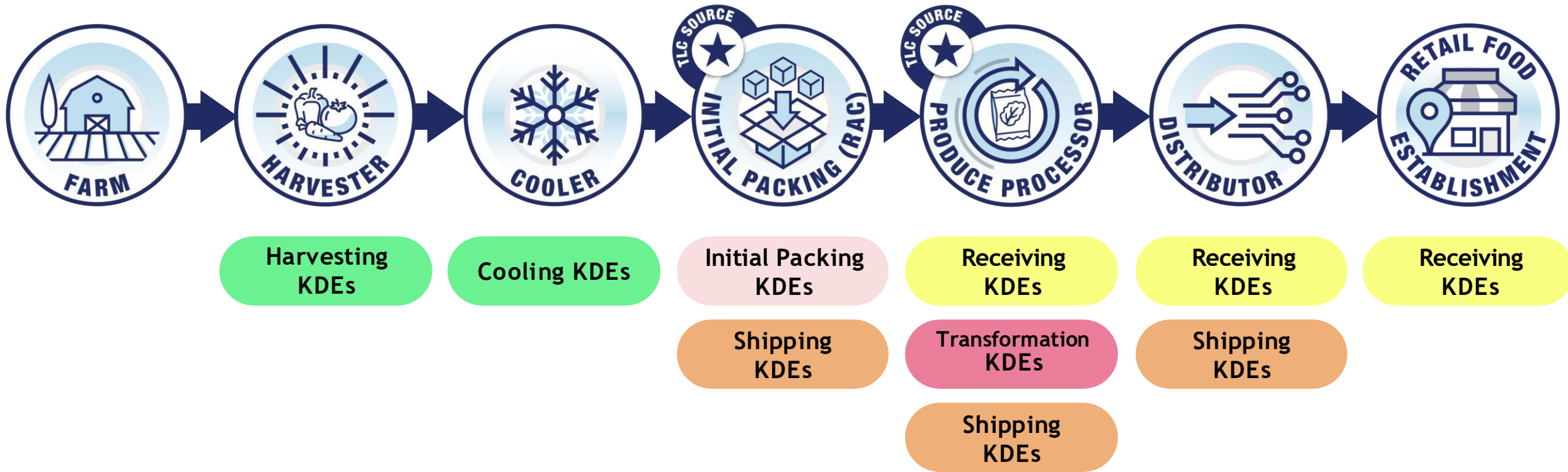
TLCs can only be assigned or changed when the following occurs:

- Initial packing of a RAC
- First land-based receiving of a food obtained from a fishing vessel
- Transformation of a food

Once a TLC is assigned, the TLC must remain unchanged and passed thru the supply chain (unless a transformation even occurs)

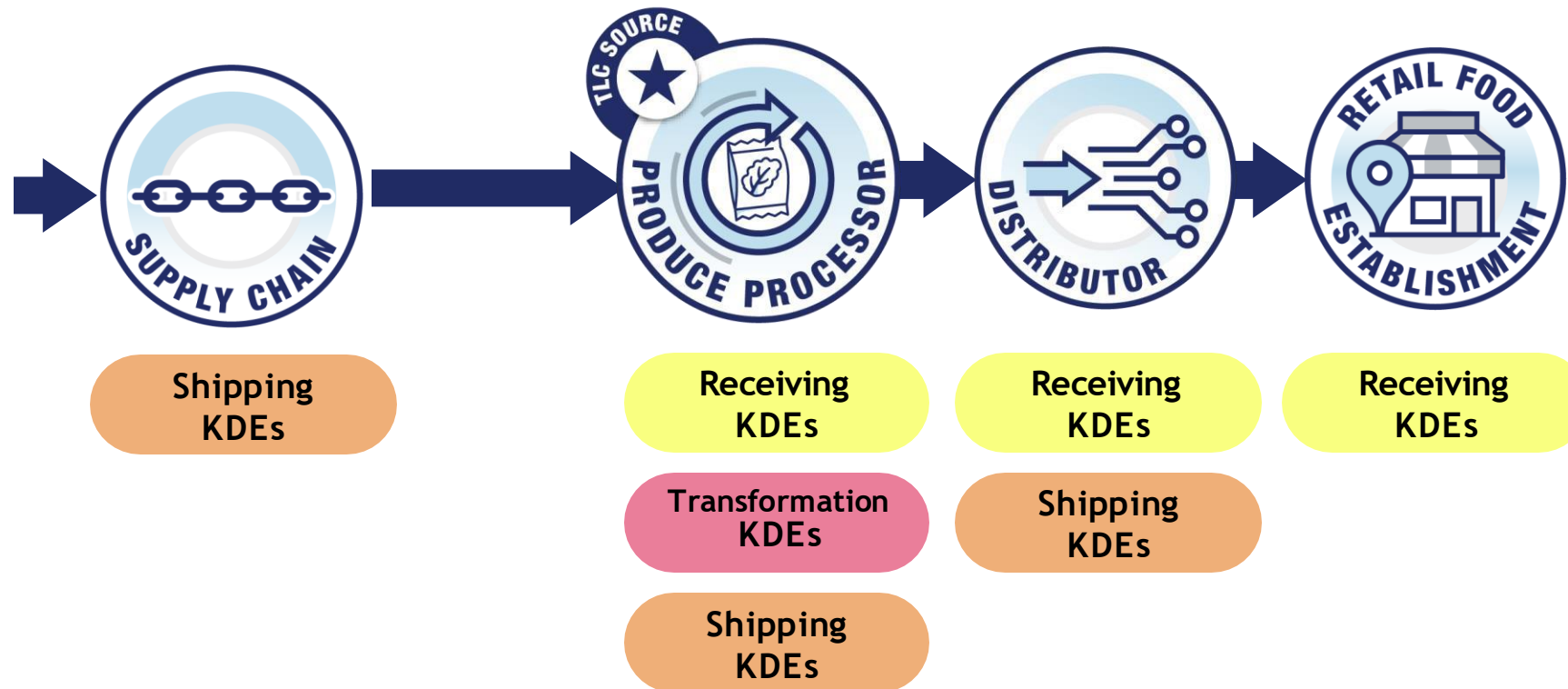


# Supply Chain Example: Fresh Produce





# Partial Supply Chain Example



Traceability Plan





# Traceability Plan

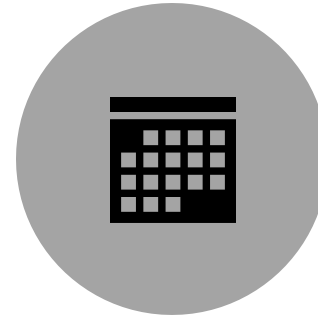
- A description of internal procedures used to maintain records under the rule
- Intended to help FDA more quickly review and understand the traceability information provided by a firm involving a food on the FTL
- Traceability plan must be updated as needed to reflect your current practices and ensure compliance with the final rule
  - The previous traceability plan must be maintained for 2 years after any update



# Records Maintenance and Availability



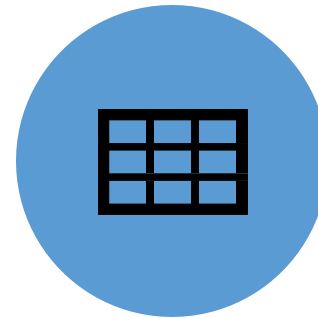
Legible **original paper, electronic**, or true copies. Stored to prevent deterioration or loss. May **include electronic links**.



Records must be **kept for 2 years**.



Available **within 24 hours (or reasonable time if FDA agrees)**. May be stored **offsite or by another entity**.



During an outbreak - **electronic sortable spreadsheet** within 24 hours of a request (including a **phone request**).

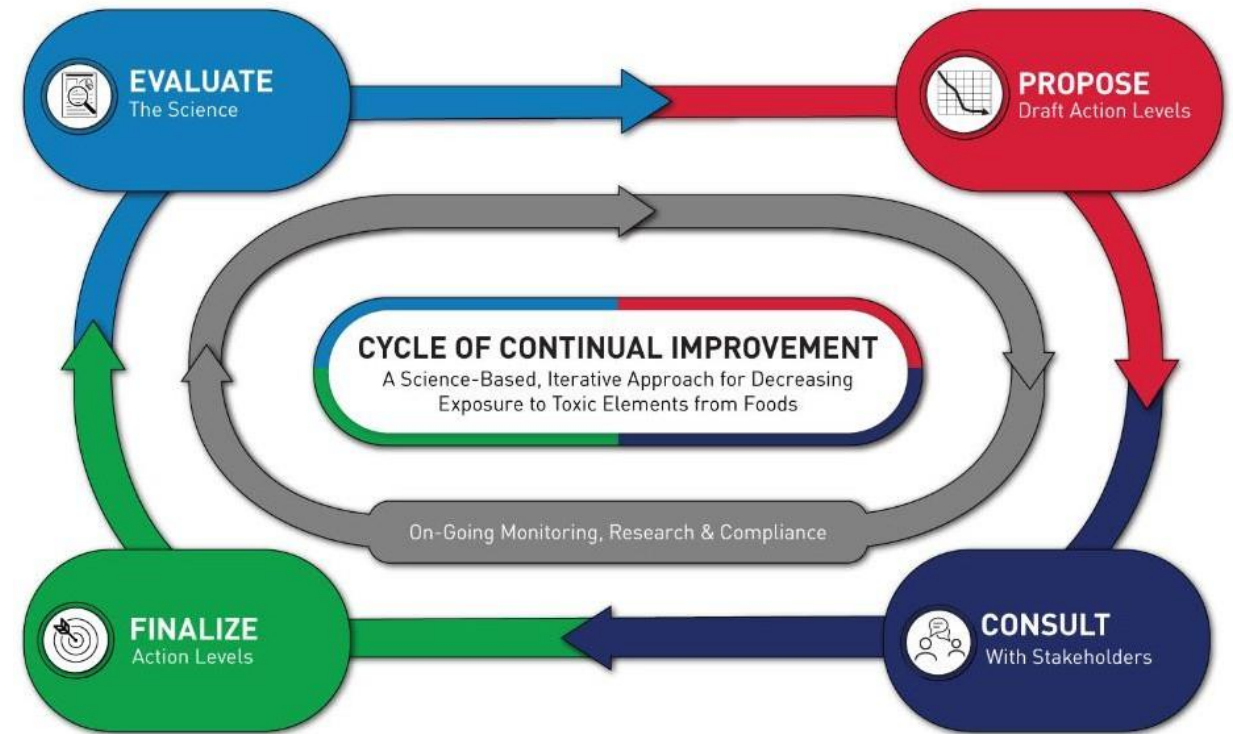


# FDA Closer to Zero Initiative

## Reducing Childhood Exposure to Contaminants from Foods

- Focus on arsenic, cadmium, lead and mercury
- Conduct **research** on presence, exposure, mitigation strategies
- **Regulation:**
  - Establish action levels
  - Increase targeted compliance and enforcement activities
  - Monitor levels over time to determine future adjustments
- **Consultation:**
  - Encourage adoption of agricultural and processing best practices by industry to lower levels of environmental contaminants

### Understanding the FDA's Approach



Closer to Zero uses a science-based, iterative approach for achieving continual improvements over time.



# Strategies for compliance

- Business owners and operators are responsible for ensuring the safety of food regardless of whether specific requirements exist
- Awareness:
  - Understand regulations, standards and guidance of producing and destination countries
  - Stay active in understanding and providing input during development
- Management
  - Strong food safety plan, including sanitation and process controls
  - Strong verification and record-keeping program
  - Comprehensive supply chain program (traceability, supplier verification)





# Strategies for compliance

- Management, cont.
  - Company-wide ownership of food safety
  - Learn from failures and near misses
- Resources
  - Government contacts and support
  - Maintain contacts with relevant expertise
    - Food Law
    - Academic
    - Consultants
  - Network and share learnings with peers
    - Trade Associations
    - OFPA
    - IAFP





# Root cause analysis

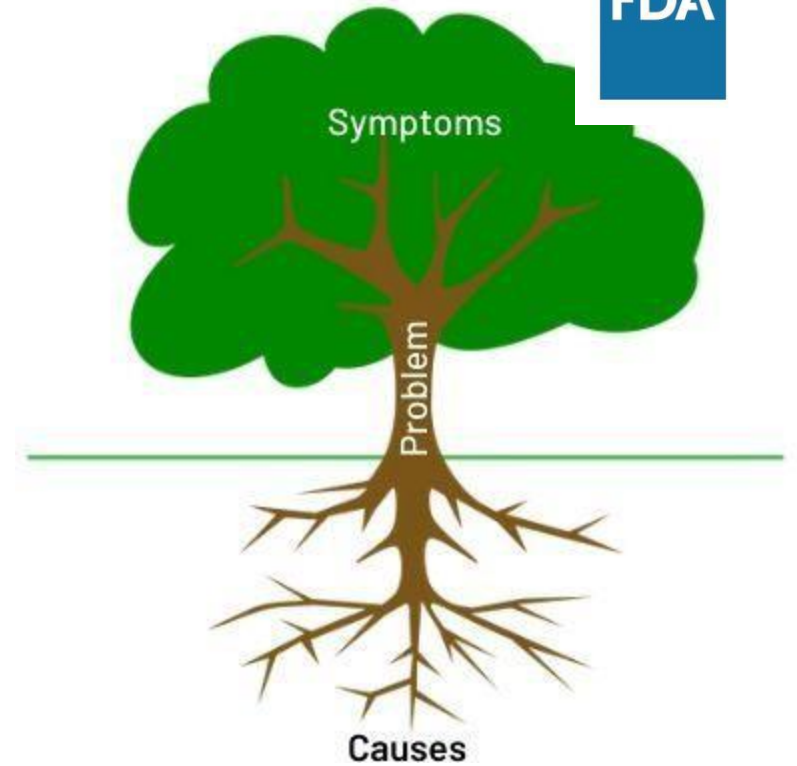
## *Digging for more after an outbreak*

### What is root cause analysis?

- Retrospective investigative method;
- Used to determine how the root cause/s of a trigger event occurred and provide information for determining what actions can be taken to eliminate the root cause and preventing a recurrence of the trigger event.

### What data inform the root cause analysis?

- Information collected during the outbreak / root cause investigation;
- Scientific literature;
- Expert elicitation.





# Outcome of RCI and RCA

- Identification of failure (s) that led to issue
- Identification of underlying factors that led to failure
- Information to characterize and determine scope of underlying factors
  - Inform needed corrective / preventive actions
- Often there is no “smoking gun” found
  - Need to identify all potential root causes and likely causal factors and implement corrective / preventive actions
  - In many cases research or ongoing verification needed to identify, confirm or characterize root cause



154771088 © Lovelyday12 | Dreamstime.com



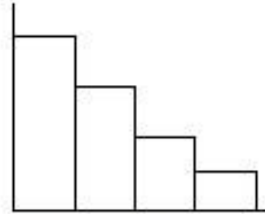
Photo 154771088 © Lovelyday12 | Dreamstime.com



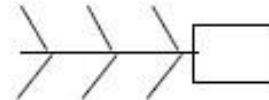
# Tools used in root cause analysis



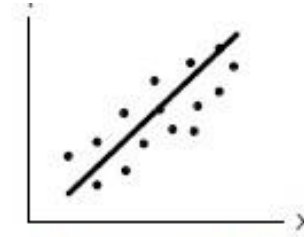
BRAINSTORMING



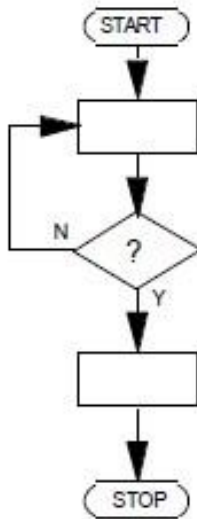
PARETO CHART



FISHBONE DIAGRAM



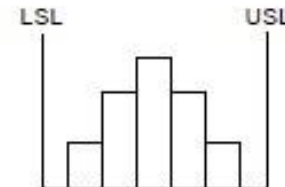
SCATTER DIAGRAM



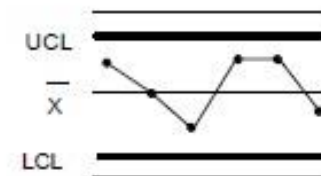
FLOWCHART



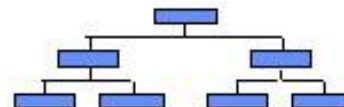
RUN CHART



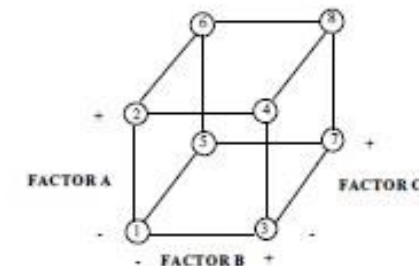
HISTOGRAM



CONTROL CHARTS



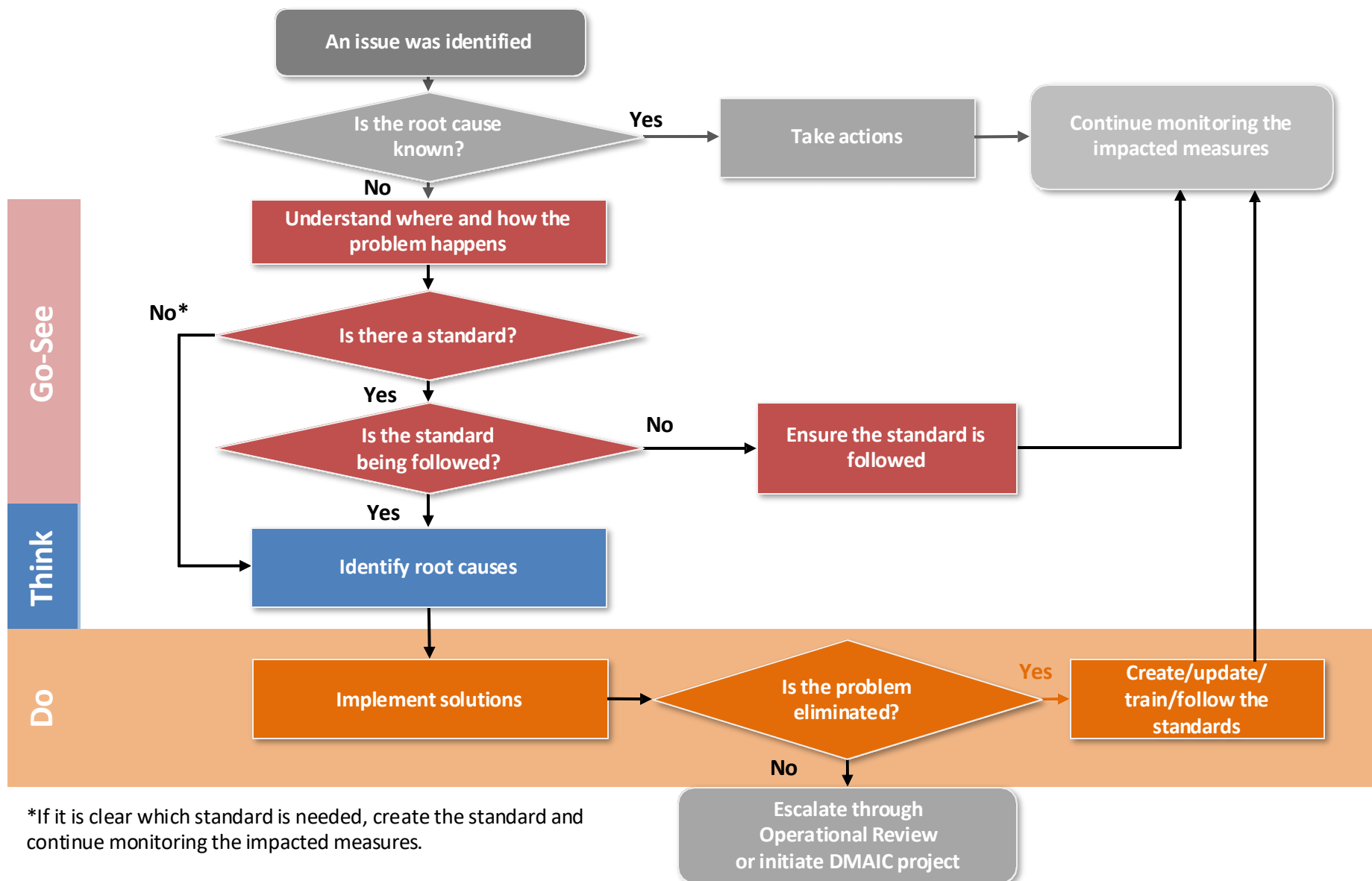
TREE DIAGRAM



DESIGN OF EXPERIMENTS



# Go-See Think Do Process





# FDA – Route to prevention

*Where we are going.....*

*Prevention*

How and why

- Analysis of outbreak
- Category challenge?
  - Levers of prevention?



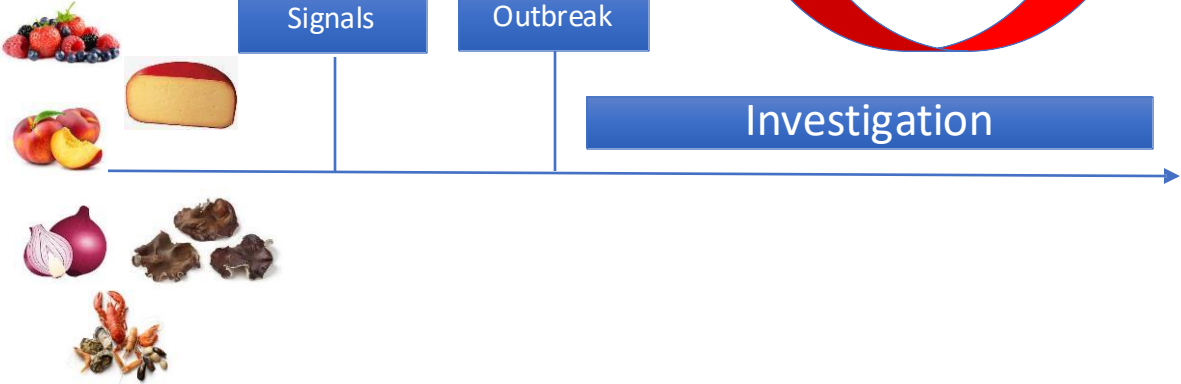
yes

Project Management

- Research
- Publications/communications
- **Industry influence**
- **Industry training**
- Compliance activities (inspections and sampling assignments)
- Regulator training
- Rule-making
- Guidance development



*Prevention Strategies*



Outbreak: What and the where  
Root Cause Analysis: How and the why



# Current Prevention Strategies

*Listeria monocytogenes* in imported Enoki and Wood Ear Mushroom

*Salmonella* in Bulb Onions

Enteric viruses in Berries

*Cronobacter sakazakii* in Powdered Infant Formula

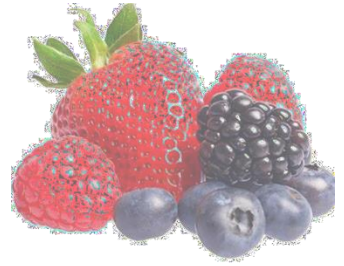
*Listeria monocytogenes* in Queso Fresco Cheese





# Development and Implementation of Best Management Practices

## *Industry Stakeholder Engagement: Providing Technical Assistance*



### Commodity Specific Food Safety Guidelines for the Dry Bulb Onion Supply Chain

2nd Edition • July 2022



All applicable U.S. and/or other regulations must be followed.  
This document assumes basic food safety practices are in  
place including good agricultural practices and provides  
additional guidance specific to dry bulb onions.



### **An activity from the prevention strategy involving bulb onions:**

- The FDA provided technical support in updating and implementing the IFPA/National Onion Association led - 2010 Food Safety, Bulb Onion Best Management and Practices Guidance Document for domestic and international bulb onion growers and shippers
- The FDA continues to contribute to the socialization, promotion of the updated Bulb Onion Best Management and Practices Guidance across the domestic and international bulb onion industry to encourage adoption and implementation by industry members.



# Areas of focus for prevention

## Enteric viruses in berries

- Communicate learnings from recent enteric virus outbreaks
- Identification of best practices and development of commodity-specific guidance
  - Design and management of sanitary facilities
  - Practices for handling and transfer of berries
  - Worker health, including vaccination
- Research to understand the transfer, distribution and viability of hepatitis A in the farm and processing environment
- Research to identify relevant treatments for control of enteric virus in agricultural and process water, and sanitation processes.

### Outbreak Investigation of Hepatitis A Virus: Strawberries (May 2022)

*FDA's investigation is complete; CDC declares outbreak over.*



### Outbreak Investigation of Hepatitis A Virus Infections: Frozen Strawberries (February 2023)

*Additional recall initiated for DayBreak Blend. Do not eat recalled Frozen Organic Strawberries. FDA's investigation is ongoing.*

Government of Canada / Gouvernement du Canada

Canada.ca • Health • Recalls and safety alerts

Search website

**Recalls and safety alerts**

Food recall warning

**Alasko brand IQF Whole Raspberries and IQF Antioxidant Blend recalled due to norovirus**

► Brand(s)

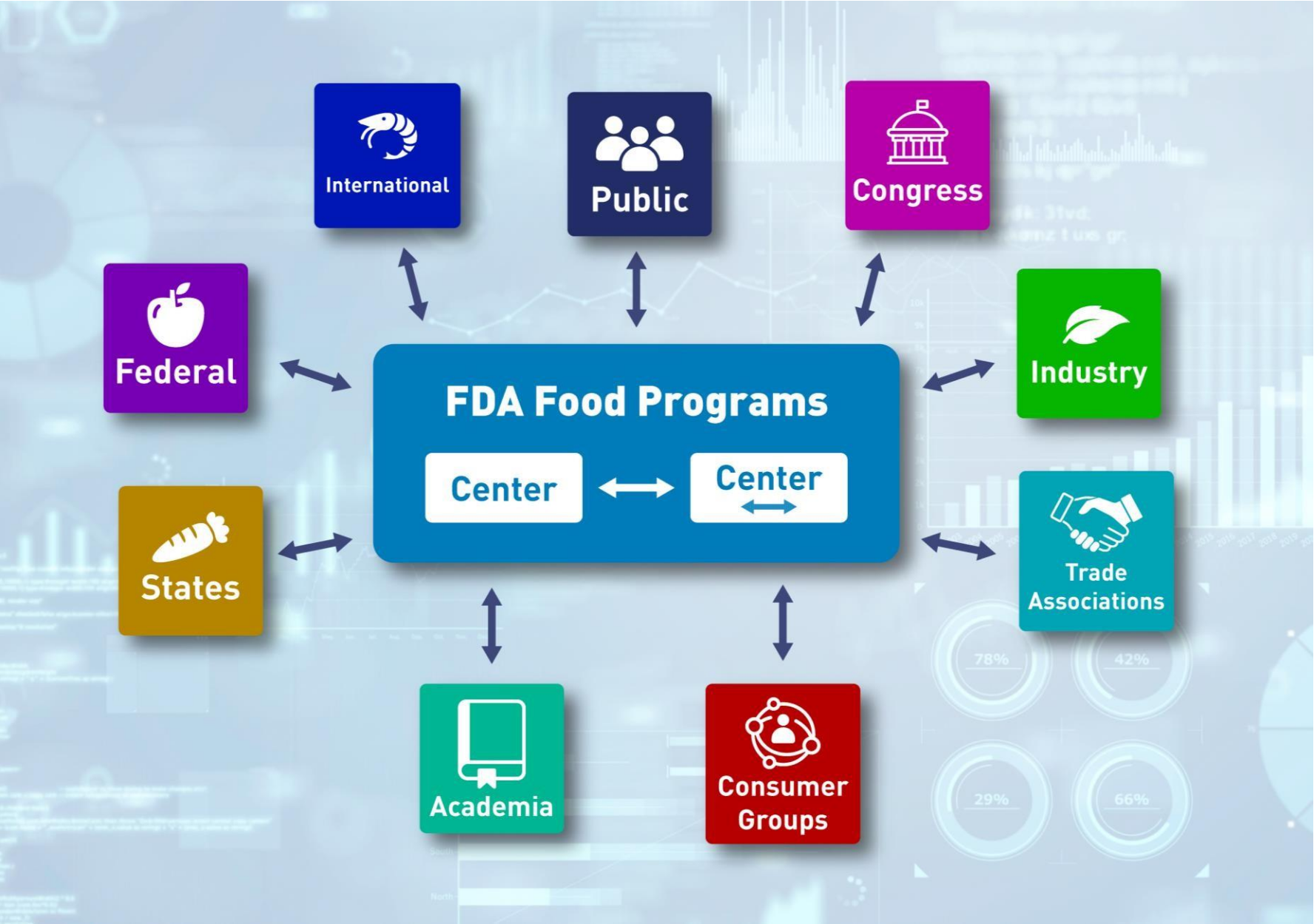
Last updated: 2023-06-09



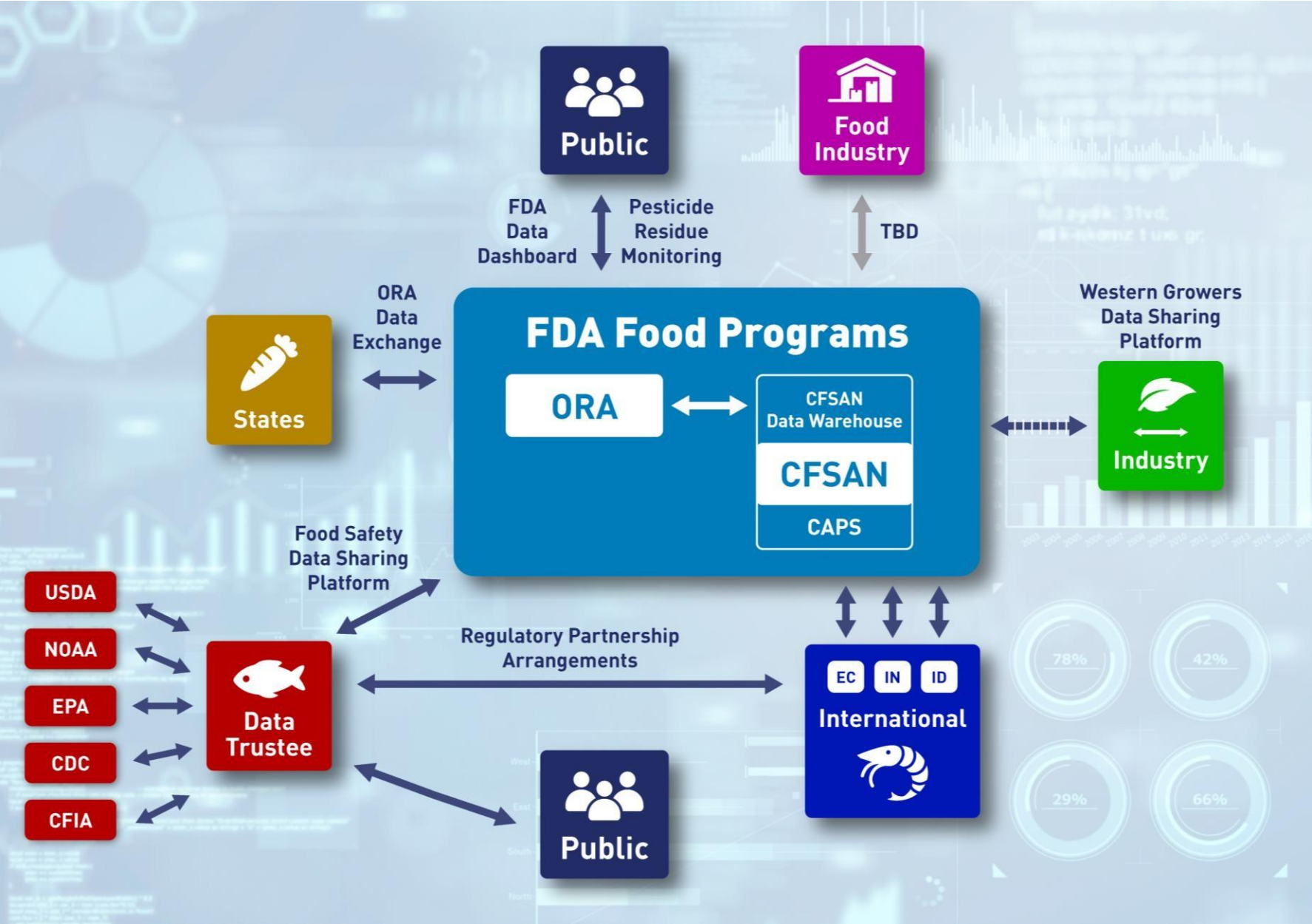
**Focus on Data-Sharing.  
Data is the new oil.**















**Our mission is to provide food safety professionals worldwide with a forum to exchange information on protecting the food supply**



# IAFP History



First meeting of IADMI October 16. 1911  
Milwaukee, WI

- Founded in 1911 as “International Association of Dairy and Milk Inspectors.
- 1947 “International Association of Milk and Food Sanitarians”
- 1963 “International Association of Milk, Food and Environmental Sanitarians”
- 1999 “International Association for Food Protection



# IAFP Executive Board 2024-2025



**President-Elect**  
***Manpreet Singh***  
University of Georgia



**Past President**  
***Tim Jackson***

U.S. Food and Drug  
Administration



**President**  
***Mark Carter***  
MC Squared



**Affiliate Council  
Chairperson**  
***Caio Carvalho***  
Cargill



**Vice President**  
***Manan Sharma***  
USDA/ARS



**Secretary**  
***Pam Wilger***  
Post Consumer Brands



**Executive Director**  
***Lisa Garcia***  
IAFP





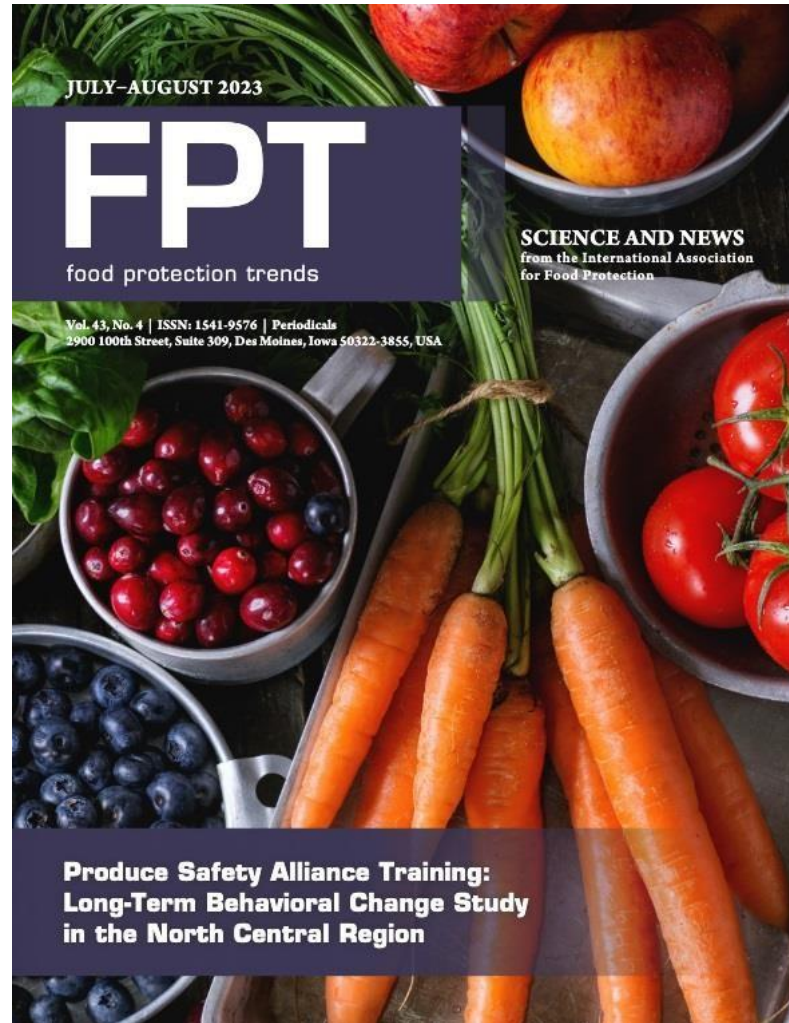
## IAFP Publications

The world's leading refereed publication for research articles on food safety and quality

- 1938 “Journal of Milk Technology”
- 1965 Scope of “Journal of Milk and Food Technology” expanded to included more “general and practical” information
- 1975 “Journal of Food Protection
- Open Access as of January 2023



# IAFP Publications



- Publication with peer-reviewed articles on applied research and special food safety features
- 1980 “Food and Feed Man
- 1981 “Dairy and Food Sanitation”
- 2003 “Food Protection Trends
- Available in print and online



# IAFP Publications

Electronic newsletter featuring

- Association updates,
- global news and resources,
- topics of interest to food safety professionals

*Sent monthly  
to Members*



**We did it! IAFP 2023 had its highest attendance since pre-COVID** with more than 3,200 registered attendees taking part in the leading food safety conference — a 7% increase over 2022! Toronto easily absorbed our participants among its nearly three million residents, enticing them over four days — and in many cases, extend their stay — to enjoy the entertainment, food, and spectacular sites. Thank you to our attendees, exhibitors, sponsors, contributors, volunteers, Executive Board Members, and the IAFP staff for the hundreds of hours devoted to bringing the IAFP “family” together again!



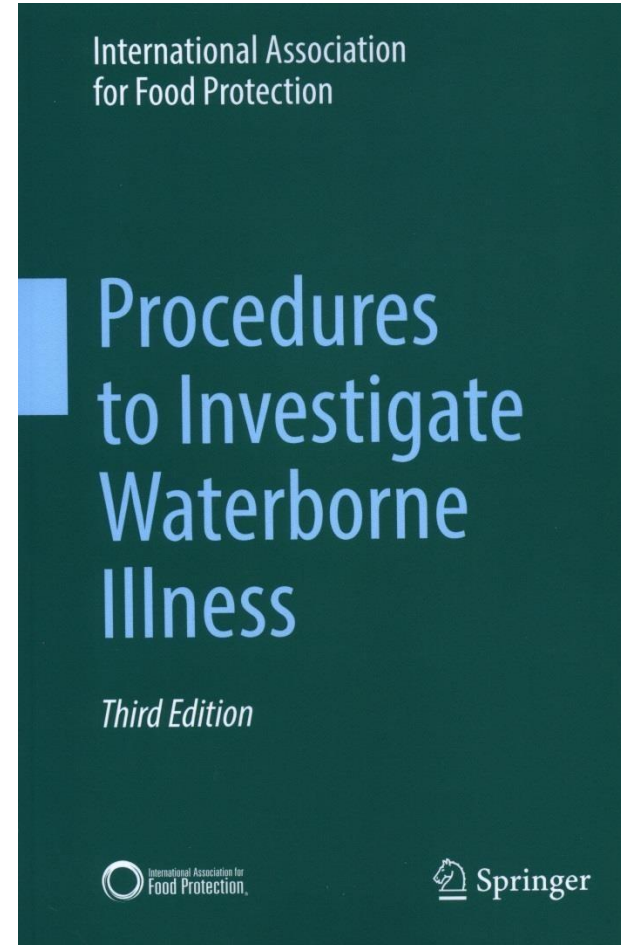
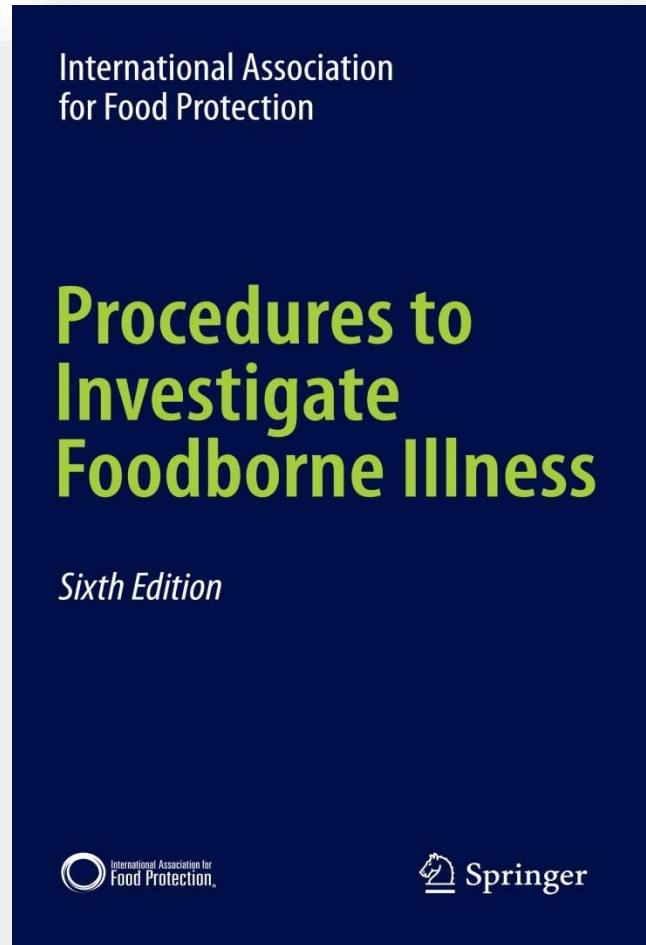




- Exchange
- Inform
- Connect



# IAFP Publications



*Invaluable guides for public health personnel*



# Free Webinars for Food Safety Professionals and Students



- FREE webinars throughout the year on a range of topics submitted by committees, Members, organizations, PDGs, and Affiliates
- Sponsored by the IAFP Foundation
- Recordings available to IAFP Members only on the IAFP website
- Webinar idea? Complete a proposal online!



# Future IAFP Annual Meetings

2025: Cleveland, Ohio

- July 27–30

2026: New Orleans, Louisiana

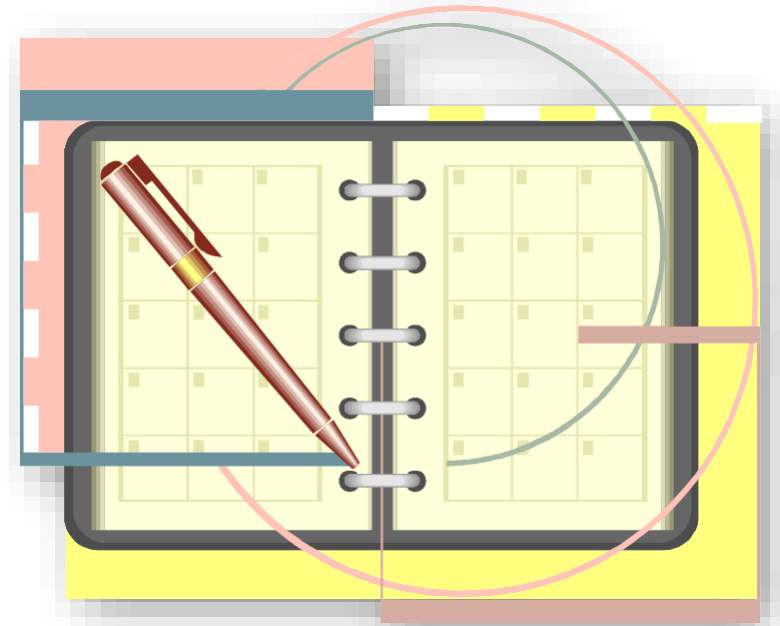
- July 26–29

2027: Kansas City, Missouri

- July 18–21

2028: Charlotte, North Carolina

- July 23-26





# European and International Symposia

## *European*

- **2024 Geneva, Switzerland**
- 2023 Aberdeen, Scotland
- 2022 Munich, Germany
- 2021 Virtual
- 2019 Nantes, France
- 2018 Stockholm, Sweden
- 2017 Brussels, Belgium

## *International*

- **2024 Latin America – Brazil (11/11 – 11/14)**
- 2022 Latin America – Colombia
- 2021 Asia-Pacific – Korea
- 2020 Asia-Pacific – Hong Kong
- 2020 Latin America – Chile
- 2018 Latin America – Argentina
- 2016 Latin America – Mexico





## Other International Conferences



Turkish Food Safety  
Conference  
May 9-10, 2024  
Istanbul, Türkiye



Dubai International Food  
Safety Conference  
October 21 - 23, 2024  
Dubai, UAE



## Other International Conferences



### China International Food Safety & Quality Conference

October 21 - 23, 2024  
Beijing, China



### INOFOOD 2024

November 25 – 26, 2024  
Santiago, Chile



# Service and Growth Opportunities

## Committees

- Standing Committees
- Special Committees
- Task Forces

## Professional Development Groups (PDGs)

- Diverse focus groups in 31 specialized areas

## Affiliate Council

- Delegates from 57 worldwide Affiliate organizations, with representation on IAFP Executive Board





# Professional Development Groups (PDGs)

**Advanced Molecular Analytics**  
**Animal and Pet Food Safety**  
**Applied Laboratory Methods**  
**Beverages and Acid/Acidified Foods**  
**Dairy Quality & Safety**  
**Data Management and Analytics**  
**Developing Food Safety Professionals**  
**Food Chemical Hazards/Food Allergy**  
**Food Defense**  
**Food Fraud**  
**Food Hygiene & Sanitation**  
**Food Law**  
**Food Packaging**  
**Food Safety Assessment, Audit & Inspection**  
**Food Safety Culture**  
**Food Safety Education**  
**Fruit & Vegetable Safety & Quality**  
**HACCP Utilization & Food Safety Systems**  
**International Food Protection Issues**  
**Low Water Activity Foods**  
**Meat & Poultry Safety & Quality**  
**Microbial Modelling & Risk Analysis**  
**Physical Hazards and Foreign Materials**  
**Plant-Based Alternative Products Quality and**

**Food Safety**  
**Pre Harvest Food Safety**  
**Retail & Foodservice**  
**Sanitary Equipment & Facility Design**  
**Seafood Safety & Quality**  
**Student**  
**Viral & Parasitic Foodborne Disease**  
**Water Safety & Quality**



# Affiliate Connections

## *57 Affiliates Worldwide*

- North America – 36
  - USA (32), Canada (4)
- South/Latin America – 5
  - Argentina, Brazil, Chile, Colombia, Mexico
- Europe – 4
  - Hungary, Portugal, Spain, UK
- Asia – 9
  - China, Hong Kong, Japan, Korea, United Arab Emirates, Lebanon, Taiwan, Turkey, Southeast Asia
- Australia and Oceania – 2
  - Australia, New Zealand
- Africa -1
  - Across the continent





## Who We Are

Founded in 1958 as a non-profit educational association

Main objective is to provide a common forum for members to exchange ideas and information, and make connections with like-minded professionals

Focus on food manufacturing in Ontario, with an emphasis on food safety

Offer industry updates and hot topics relevant to businesses

Provides student scholarships

Recognize excellence through industry-related awards

Affiliated with the International Association for Food Protection (IAFP)

## Mission

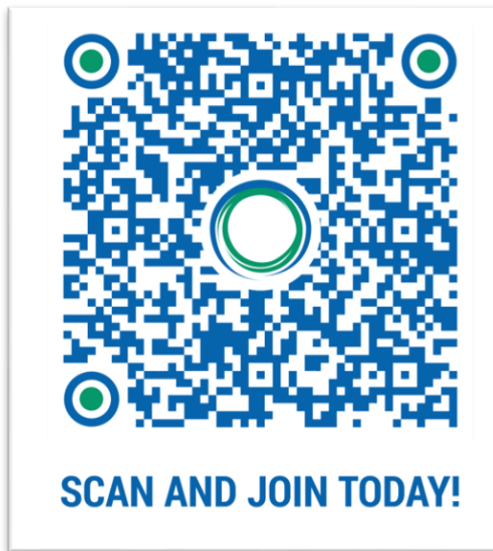
The Ontario Food Protection Association represents industry, government and academia by bringing professionals together in a forum to promote, educate and communicate innovation in food safety.

- To assist in improving the professional status of those involved with food safety.
- To collect and distribute to its members and interested parties, information pertaining to sanitation and food safety.
- To encourage improvements in food safety practices.
- To provide a forum to discuss current concerns in food protection and other topics of mutual interest.
- To communicate with various regulatory agencies on issues of sanitation and food protection.
- To cooperate with other professional groups in the development and advancement of public health, food safety practices and general and environmental sanitation.





Make it *your* Association!



[www.foodprotection.org](http://www.foodprotection.org)



# Trends and Challenges in Food Safety Regulations: Strategies for Compliance

Tim Jackson, Ph.D.

*Senior Science Advisor for Food Safety*

Office of Food Safety

Center for Food Safety and Applied Nutrition

Ontario Food Protection Association Annual Meeting

September 30, 2024



# Unified HFP Functional Model

## Risk management functions

*managing public health risks through 3 areas of focus:*

- nutrition; microbiological food safety; and chemical safety

## Strategic management functions

*leveraging data to better prioritize activities and resources based on risk*

- surveillance strategy; risk-informed decision framework; and resource management for HFP and related field activities

## Cross-cutting functions

*the “tools” supporting risk management priorities*

- integrated food safety system partnerships; laboratory operations and applied science; compliance and enforcement; policy; and communications and engagement

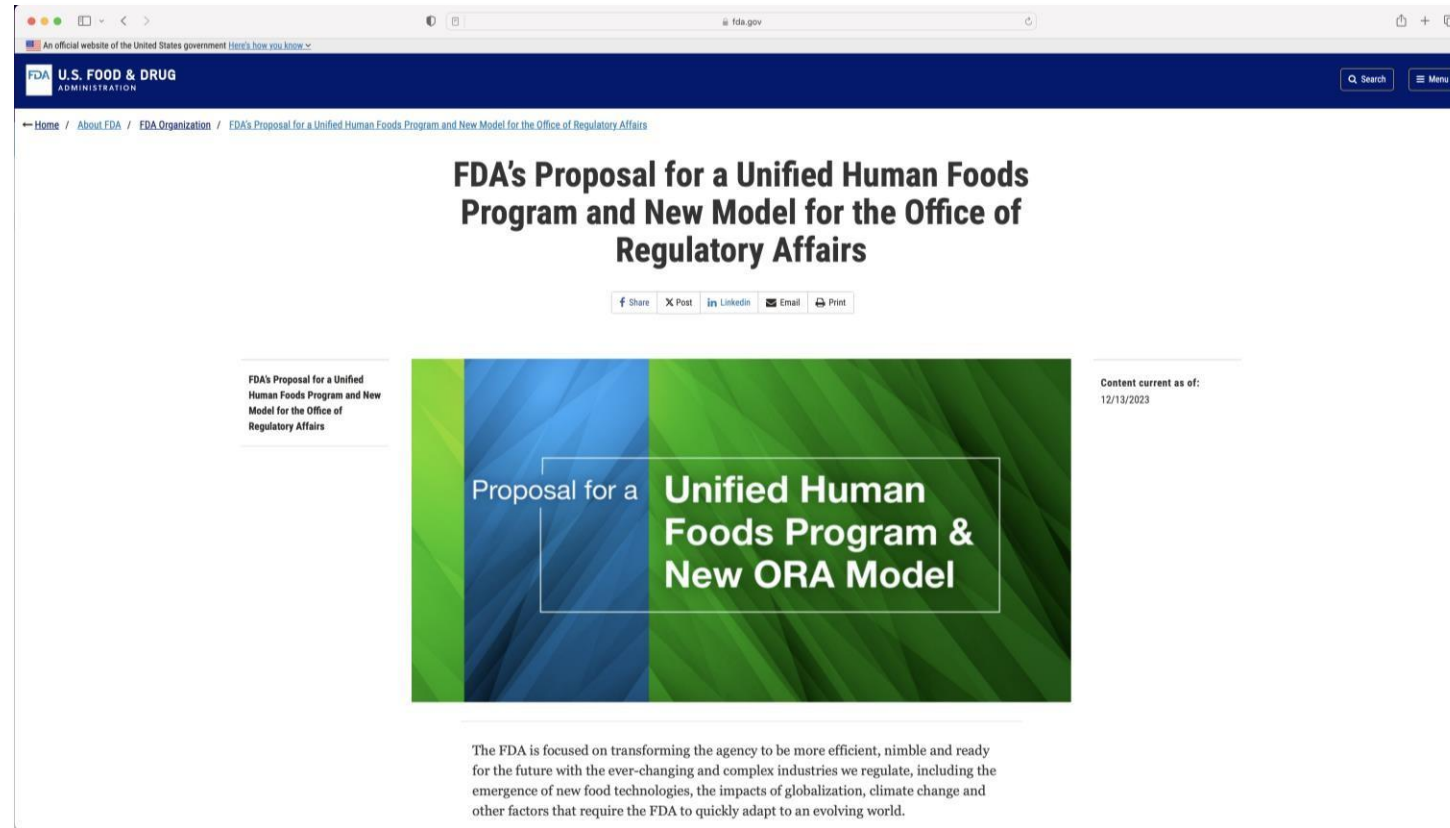


# Timeline for the Proposed FDA Reorganization





# For More Information







# Engaging People: Modern Approaches to Food Safety Communication

**BENJAMIN CHAPMAN, PH.D**

Professor, Food Safety Specialist, Department of Agricultural and  
Human Sciences, North Carolina State University, NC State Extension





# Engaging People: Modern Approaches to Food Safety Communication



Ben Chapman (and so many more, see my last slide)  
Department of Agricultural and Human Sciences  
NC State University



# Funding disclosure

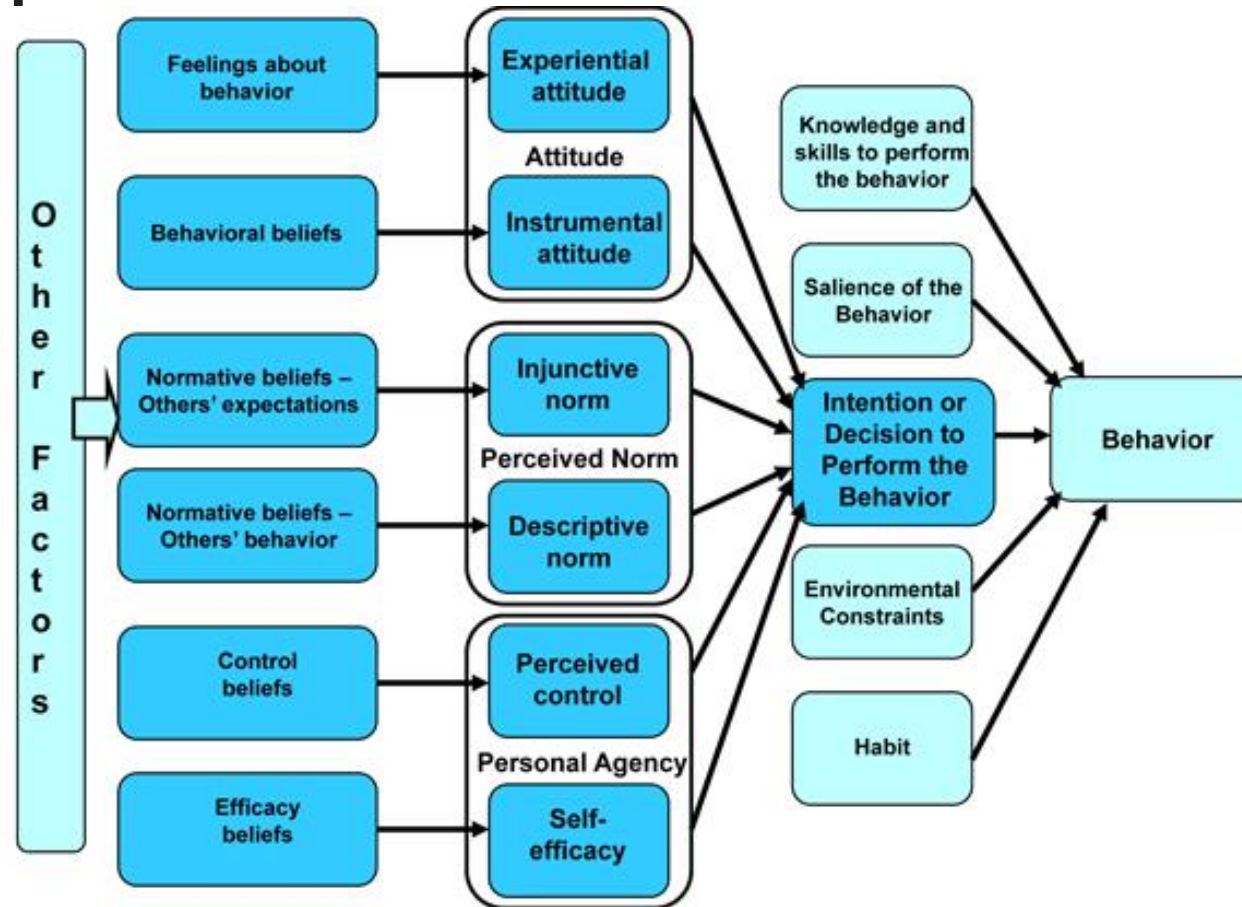
AFFILIATION/FINANCIAL INTERESTS	ENTITIES
Grants/Research Support	USDA NIFA, Extension Foundation, GOJO Industries, USDA ARS, NC DHHS, NC DPI, SSAFE, Testo
Scientific Advisory Board/ Consultant/ Board of Directors	AFFI, STOP Foodborne Illness, National Restaurant Association, NACMCF, Culinary, Varcode, IFIC
Stock Ownership	N/A
Employer	NC State University








# Its more than just behavior (and it gets complicated)





A hand in a blue suit sleeve holds a transparent rectangular box. The box contains three lines of text. The background is a dark, blurred gradient.

Get to know them.  
What do they do.  
Figure out what competes.



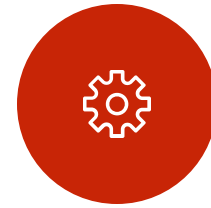
# What we do...



**Observational  
Studies**



**Microbiological  
Studies**



**Modeling**



**Existing Datasets  
and Literature  
Reviews**



**Surveys,  
Interviews, and  
Focus Groups**



**Innovative  
Research Design  
and Evaluation**

Most of our projects include multiple methods as part of the research design.



# Where we do it...



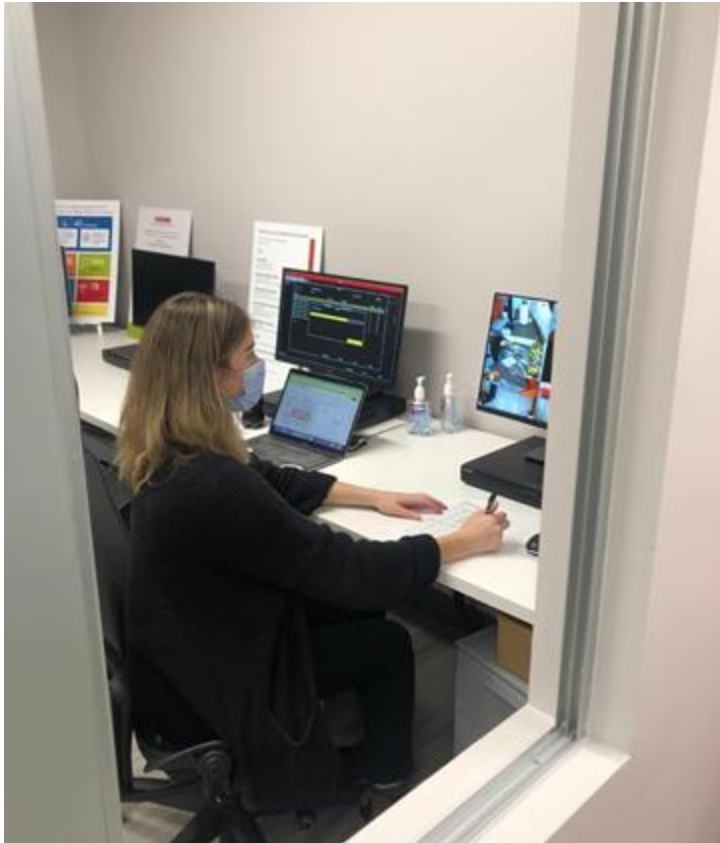
North Carolina State University



One of three home-style research kitchens.



# How we do it...



Observation room; monitor behaviors in real time.



One of eight cameras used to record each observation.



Multiple angles help capture proper sequence of events.



# Observations and consumer practices



Over the years, we have looked at thermometer use, cleaning and sanitizing, and poultry washing in addition to handwashing.

1,284

Observations conducted

2,889

Hours of video coding

25,680

Minutes of recorded interviews


6,686

Hand-washing events

83

**SUCCESSFUL**  
Hand-washing events



A close-up photograph of a person's right hand, wearing a light blue dress shirt cuff, holding a transparent rectangular box. The hand is positioned on the right side of the frame, with the thumb and index finger gripping the edges of the box. The box is centered in the middle of the frame and contains three lines of black text. The background is a soft, out-of-focus gradient of light blue and grey.

They have to know why.  
Sometimes the why  
changes.  
Humans love a “turns out”



# Self-reported perceptions



## What have we learned so far?

What people say they do, and what they actually do, are very different

**Handwashing Awareness:** Most participants self-reported that they typically wash their hands before cooking, but observed rates of handwashing during food preparation were much lower. This discrepancy highlights a tendency for self-reporting bias regarding food safety behaviors.

**Thermometer Usage:** A notable proportion of participants in the treatment groups report using a food thermometer when food safety instructions were present. However, many also indicated this was not their usual practice.

**COVID-19 Influence on Hygiene:** Around 62% of study participants reported changes in their handwashing habits due to the COVID-19 pandemic, becoming more conscious of hand hygiene, especially before food preparation.

**Recipe Awareness:** A majority of participants in recalled noticing the food safety instructions in the recipes (in studies) where recipes were provided), and about two-thirds stated that this information would influence their future cooking behavior, particularly in thermometer use and handwashing practices.



# Handwashing



## What have we learned so far?

Hands are a source of cross-contamination in the kitchen.

After handling raw meat/poultry consumers wash hands only about 30% of the time.

Very few consumers (~1.2%) meet CDC handwashing recommendations

- Wet hands with water
- Rub hands with soap for at least 20 seconds
  - *Most common point of failure*
- Rinse hands with water
- Dry hands using a clean, one-use towel



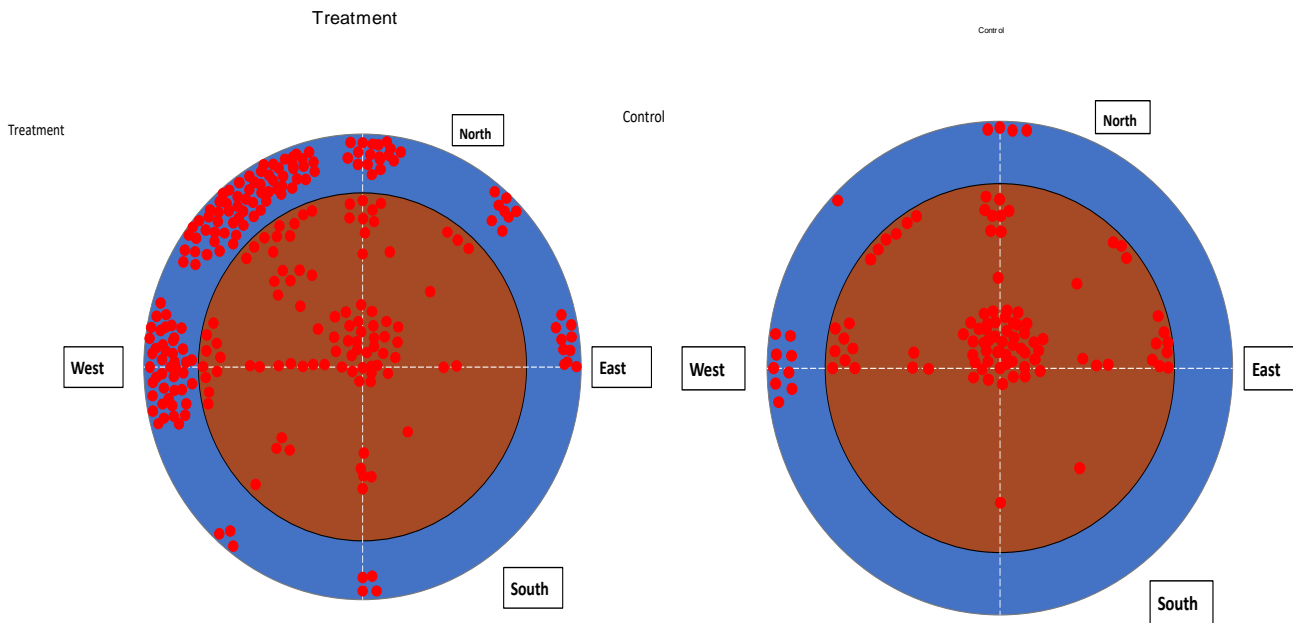
# Thermometer use

## Ground turkey patty cooking (n=400)

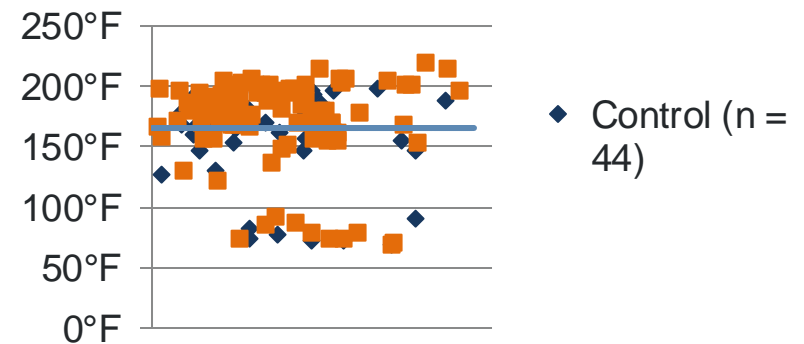
### Study Design

Participants were observed preparing ground turkey patties in test kitchens, with cameras recording their actions throughout the process.

The study focused on measuring the correct use of thermometers for checking the doneness of the patties, with the treatment group showing a higher likelihood of using the thermometer correctly.



Results: Final Temperatures of Patties





# Cross-contamination

## Poultry washing study (n=300)

Low Cleaning Success Rates: Only 4% of participants successfully cleaned and sanitized the sink after washing chicken, and most attempts were incomplete, with many participants either cleaning with water only or failing to sanitize surfaces properly.

While 61% of the control group washed the chicken, only 7% of the treatment group (who received food safety messaging) did the same, demonstrating a significant behavioral change in response to the intervention

Kitchen Counter Cleaning: After washing poultry, 65% of participants did not attempt to clean the kitchen counter, and successful cleaning and sanitizing were observed in only 5% of cases, indicating widespread neglect in following proper surface cleaning protocols.

Despite the intervention, both washers and non-washers experienced significant cross-contamination, particularly in the sink.


Shumaker, E. T., Kirchner, M., Cates, S. C., Shelley, L., Goulter, R., Goodson, L., Bernstein, C., Lavalley, A., Jaykus, L., and Chapman, B. 2022. Observational study of the impact of a food safety intervention on consumer poultry washing. J. Food Prot. 85:615-625. <https://doi.org/10.4315/JFP-21-397>.



**Of the participants who washed their raw poultry, 60% had surrogate bacteria in the sink after washing or rinsing the poultry. Even more concerning is that 14% still had the surrogate in their sinks after they attempted to 'clean' the sink.**


**26% of participants that washed raw poultry transferred bacteria from that raw poultry to their ready to eat salad lettuce**



A hand in a blue suit sleeve holds a transparent rectangular block. The block contains the text "Storytelling matters. So does science. But trust has changed." The background is a dark, gradient blue.

Storytelling matters.  
So does science.  
But trust has changed.



A hand in a light blue suit sleeve holds a transparent rectangular box. The box contains the text: "Make things all the time. Be surprising. Be a disrupter. Try everything." The background is a dark, blurred gradient.

Make things all the time.  
Be surprising. Be a disrupter.  
Try everything.



# Impacting behaviors is hard



LEARN MORE GOOD AT  
**160isGood.com**

brought to you by the STEC CAP grant

## 160 Is Good project (n= 305)

in Fayetteville, NC, pop 210,000.

Radio: aired 2,292 public service announcements on the top 7 radio, generating an estimated 8,328,300 radio impressions, reaching 73% of the market.

Digital Advertising: 3,174,418 digital impressions through online banner ads, video ads, and a mobile music app.

Movie Theater Ads: A 30-second pre-roll advertisement at 75 movie screens

total cost was approximately \$200,000, with \$83,000 allocated to content development, and \$117,000 towards media purchases.

The campaign generated a total of 11,502,718 impressions across various media platforms.

Post-campaign surveys showed a modest increase in thermometer usage, with 16% of respondents using a thermometer to determine burger doneness, up from 14% pre-campaign.

Only 24% of post-campaign respondents recalled hearing or seeing the "160° is Good" message specifically

Cope, S. J., Porto-Fett, A. C. S., Luchansky, J. B., Hochstein, J., and Chapman, B. 2020. Utilization of quantitative and qualitative methods to investigate the impacts of a pilot media campaign targeting safe cooking techniques and proper thermometer use. Food Prot. Trends 40(5):332-348.





## Nutrition Facts

Serving Size: 1 piece (112 g)  
Servings Per Container: 2

### Amount Per Serving

Calories 210 Calories from Fat 100

%Daily Value\*

Total Fat 11g 17%

Saturated Fat 2g 10%

Trans Fat 0g

Cholesterol 10mg 3%

Sodium 400mg 17%

Total Carbohydrate 9g 3%

Dietary Fiber 0g 0%

Sugars 1g

Protein 19g

Vitamin A 2% • Vitamin C 6%

Calcium 10% • Iron 6%

\*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

	Calories	2,000	2,500
Total Fat	Less than	65g	80g
Saturated Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate	Less than	300mg	375mg
Dietary Fiber	Less than	5mg	30g

INGREDIENTS: CHICKEN BREAST, WATER, STARCH, POTATOES, ONIONS, BUTTER, NATURAL FLAVORING, SUGAR, PASTEURIZED SWISS CHEESE, AND PARMESAN CHEESE (SWISS CHEESE: PASTEURIZED MILK AND SKIM MILK, SALT, ENZYMES), PARMESAN CHEESE (CULTURED MILK AND SKIM MILK, SALT, ENZYMES), SOYbean OIL, SODIUM PHOSPHATE, SALT, FULLY COOKED, WITH WATER ADDED (CURED WITH WATER, SALT, POTASSIUM, SODIUM PHOSPHATE, SODIUM ACIDOPHOSPHATE, SODIUM CITRATE), CURED, BLEACHED WHEAT FLOUR, ENRICHED WITH NIACIN, REDUCED IRON, THIAMINE MONONITRATE, RIBOFLAVIN, FOLIC ACID, VEGETABLE OIL, WHEAT, CONTAINS 2% OR LESS OF: CORN MEAL, WHITE, WHEAT FLOUR, BARLEY, CORN, POTATOS, CORN FLOUR, NATURAL FLAVORS, SALT, PARSLEY, ONION EXTRACT (COLOR), BUTTERMILK POWDER, BUTTER, PARMESAN CHEESE (PASTEURIZED MILK AND SKIM MILK, SALT, ENZYMES), DRIED YEAST, SODIUM PHOSPHATE, MONONITRATE, TURMERIC EXTRACT (COLOR), PREBROWNED IN VEGETABLE OIL, CONTAINS MILK, WHEAT

## RAW

**RAW— DO NOT MICROWAVE:** to help prevent foodborne illness caused by eating raw poultry

**CONVENTIONAL OVEN COOKING INSTRUCTIONS:**

Due to variations in ovens, cooking times may vary.

1. PREHEAT OVEN to 375°F.
2. Remove frozen **RAW** breast(s) from pouch(es). Place each breast AT LEAST 2 INCHES AWAY on a **FLAT METAL BAKING SHEET**.

3. Bake in PREHEATED OVEN for:

**15-20 MINUTES FOR 1-4 BREASTS**

**25-30 MINUTES FOR 5-6 BREASTS**

For Food Safety, cook to a **MINIMUM INTERNAL TEMPERATURE** of 165°F measured by a meat thermometer.

**INSTRUCTIONS:** Insert meat thermometer into meat layer on each breast cooked side upward.

4. After baking, LET COOL for AT LEAST 3 MINUTES before serving. **CAUTION:** Poultry will be hot and may splatter if not cooled.



## SINCE 1962 OUR PROMISE TO YOU

When James Kosa opened the doors of his meat market in 1962, he made a promise to his customers -- to serve the very best and we keep his promise today. If you're not completely satisfied, please let us know, and we'll make you happy.

FOR MORE INFO ON COOKING & SAFE HANDLING VISIT  
[WWW.KOSAFOODS.COM](http://WWW.KOSAFOODS.COM)



CONNECT WITH US AT:  
[WWW.KOSAFOODS.COM/OURPROMISE](http://WWW.KOSAFOODS.COM/OURPROMISE)  
1-555-555-5555

Distributed by:  
Kosa Foods, Inc., Harrisburg, PA 17111  
1-555-555-5555



## IMPORTANT!


### FOOD SAFETY INSTRUCTIONS

Raw meat and poultry may contain bacteria that could cause illness if not handled or cooked safely. Follow these instructions to avoid illness.

<b>WASH AND DRY HANDS</b>	<b>CLEAN UTENSILS AND SURFACES, AND THEN SANITIZE</b>
<b>KEEP REFRIGERATED MEAT AND POULTRY SEPARATE</b>	<b>USE FOOD THERMOMETER</b>

Minimum Internal Temperatures:  
Beef, pork, veal, lamb, steaks, roasts & chops 145°F + 3-min rest  
Turkey, chicken, duck, whole, pieces & ground 165°F  
Ground beef, pork, veal & lamb 160°F  
Fish 145°F  
[www.FoodSafety.gov](http://www.FoodSafety.gov)



A hand in a blue suit sleeve holds a transparent rectangular box. The box contains the following text:

Follow the trends and embrace.  
Understand where the learner  
is.  
Collaborate vs. combat.  
Transdisciplinary is the way.

Follow the trends and embrace.  
Understand where the learner  
is.  
Collaborate vs. combat.  
Transdisciplinary is the way.



# Research needs and gaps



**Asking people what they do only has limitations, we must use mixed methods approaches including observation and microbiology**



**Quicker, AI/machine learning for sensors to generate more practice data**



**Very few research groups are doing this work, so most of what we know comes from self-reported retrospective data**



# For more details

USDA Food Safety and Inspection Service  
U.S. DEPARTMENT OF AGRICULTURE

ABOUT FSIS CONTACT US CAREERS NEWS & EVENTS EMPLOYEES

FOOD SAFETY **SCIENCE & DATA** POLICY INSPECTION

RECALLS SEARCH FULL MENU

ALERT: Hickory Hollow Jerky Recalls Ready-To... See more details


## Consumer Research

This page indexes research reports related to FSIS' food safety education programs and consumer behavior.

### Meal Preparation Experiment on Breakfast

This report describes the methods and presents the results from a meal preparation study related to cooking breakfast (shell eggs, raw pork breakfast sausage, and fruit salad) conducted as part of the Food Safety Consumer Research Project. The breakfast study is the last of five iterations of a meal preparation experiment in which consumers were observed while preparing meat and poultry products regulated by the U.S. Department of Agriculture's Food Safety and Inspection Service.


[Meal Preparation Experiment](#)  
[Executive Summary](#)



### Meal Preparation Experiment on Grilling

This study includes results from the fourth iteration of the meal preparation study (2020-2021), which examined consumers grilling sausage and hamburgers on an indoor grill. The study measured consumers' adherence to recommended food safety practices (such as using a food thermometer, handwashing, and preventing cross-contamination) between participants who received an educational intervention and those who did not.

[Meal Preparation Experiment](#)  
[Executive Summary](#)



**Call Our Hotline**  
For help with meat, poultry, and egg products, call the toll-free USDA Meat and Poultry Hotline:

Cates, S. C., Lavallee, A., Bernstein, C., Shumaker, E., Chapman, B., Shelley, L., Goulter, R., Goodson, L., and Jaykus, L. 2018. Food safety consumer research project: Meal preparation experiment on raw stuffed chicken breasts. Prepared for the USDA FSIS by RTI International, Research Triangle Park, NC. FSIS Contract No. AG 3A94 D 16 0130. 72 pages.

Shumaker, E., Shelley, L., Cates, S., Lavallee, A., Bernstein, C., Goulter, R., Goodson, L., Jaykus, L., and Chapman, B. 2019. Food safety consumer research project: Year 2 final report. Prepared for the USDA FSIS by RTI International, Research Triangle Park, NC. 94 pages.

Cates, S. C., Shumaker, E., Lavallee, A., Goulter, R., Chapman, B., Shelley, L., Bernstein, C., Goodson, L., and Jaykus, L. 2020. Food safety consumer research project: Meal preparation experiment on raw stuffed chicken breasts (Year 3 final report). Prepared for the USDA FSIS by RTI International, Research Triangle Park, NC. FSIS Contract No. AG 3A94 D 16 0130. 110 pages.

Shelley, L., Shumaker, E., Cates, S., Lavallee, A., Bernstein, C., Goulter, R., Goodson, L., Jaykus, L., and Chapman, B. 2020. Behavior change study: Safe handling instructions (SHI) behavior change study final report. Prepared for the USDA FSIS by RTI International, Research Triangle Park, NC. 87 pages.

Cope, S. J., Porto-Fett, A. C. S., Luchansky, J. B., Hochstein, J., and Chapman, B. 2020. Utilization of quantitative and qualitative methods to investigate the impacts of a pilot media campaign targeting safe cooking techniques and proper thermometer use. Food Prot. Trends 40(5):332-348.

Shumaker, E. T., Kirchner, M., Cates, S. C., Shelley, L., Goulter, R., Goodson, L., Bernstein, C., Lavallee, A., Jaykus, L., and Chapman, B. 2022. Observational study of the impact of a food safety intervention on consumer poultry washing. J. Food Prot. 85:615-625. <https://doi.org/10.4315/JFP-21-397>.

Duong, M., Shumaker, E. T., Cates, S. C., Shelley, L., Goodson, L., Bernstein, C., Lavallee, A., Kirchner, M., Goulter, R., Jaykus, L., & Chapman, B. 2020. An observational study of thermometer use by consumers when preparing ground turkey patties. J. Food Prot. 83:1167-1174. <https://doi.org/10.4315/JFP-19-594>.



# Food Safety Talk







# Would like to recognize:

Dr. Catherine Gensler, Dr. Gaby Arteaga,

Dr. Bek Goulter, Dr. Lisa Shelley, Dr. Ellen Shumaker, Dr. Lee-Ann Jaykus  
Emily Kingston, Dr. Meg Kirchner, Dr. Minh Duong, Mary Yavelak, Sarah Cope, Lydia  
Goodson, Catherine Sander, Jason Frye, Jeremy Faircloth, Mileah Shriner, Lindsey  
Doring, Savana Everhart Nunn, Esa Puntch, Sheri Cates, Kathy Kosa, Jenna Brophy,  
John Blitstein, Caitlin Smits, Dr. John Luchansky, Dr. Anna Porto-Fett, Jill Hochstein

And Don Schaffner from Rutgers

Studies funded by USDA FSIS and USDA NIFA

Ben Chapman, [bjchapma@ncsu.edu](mailto:bjchapma@ncsu.edu), (919) 515-8099

[Riskyornot.co](http://Riskyornot.co)

[Foodsafetytalk.com](http://Foodsafetytalk.com)

<https://cals.ncsu.edu/agricultural-and-human-sciences/>





# NUTRITION BREAK

10:30 am – 11:00 am







## Elite Sponsor Presentation



# Traceability & Recall: Cross-Sector Insights



**Geert van Kempen**

Head of Food & Beverage  
Strategy, Veeva Consumer  
Products



**Tom Ford**

Vice President Food Safety  
and Quality Assurance,  
Compass Group



**Florentina Gadau**

Food Safety Director, Sysco  
Canada



**Aaron Aboud**

Quality Director,  
RDJ Bakeries



**Birendra Rajapreyar**

OFPA Director, Chair



# Traceability & Recall: Cross-Sector Insights

Given the complexity of bakery ingredients, how does your bakery manage traceability throughout the supply chain, especially for items like flour, eggs, and preservatives? What specific challenges do you face in tracking these ingredients from suppliers to the finished product?



# Traceability & Recall: Cross-Sector Insights

As the largest distributor, how do you manage traceability across such a vast and diverse network of suppliers and customers?



# Traceability & Recall: Cross-Sector Insights

What do you think is the best approach to identify and remove affected products from use, notification of CMU central recall team or direct calls to units that received affected product? Advantages and disadvantages to each approach.



# Traceability & Recall: Cross-Sector Insights

What are the biggest technological challenges companies face when implementing traceability systems?



# Traceability & Recall: Cross-Sector Insights

What's the one lesson or best practice from your sector that you believe can be beneficial to other sectors represented on this panel?



# Traceability & Recall: Cross-Sector Insights

How does your organization's food safety culture, coupled with the training and physical environment for food safety, ensure seamless traceability and an effective recall process?



# 3MT Clive Kingsbury Competition

Sl. No.	Student Name	Topic	College/University
1	Timothy Odoh	The Role of Technology in Reducing the Impact of Food Bioterrorism	University of Guelph
2	Claudia Laiza	A Global Perspective on Fusarium Contamination: Climate-Induced Mycotoxin Risks in Cereal Crops	University of Guelph
3	Yakini Howell, Youkie Stagg	Evidence on the Effectiveness of UV-C Technology to Reduce Pathogens on Seaweed	Centennial College
4	Harleen Kaur, Ibukun oniyinde	The Effect of Sample Matrix on early detection of spiked <i>Pseudomonas aeruginosa</i> in Oats Using PCR and SPC	Centennial College
5	Sonal Saini	How changes in temperature influence the rate and extent of biofilm formation of <i>Pseudomonas licheniformis</i> in milk	Centennial College

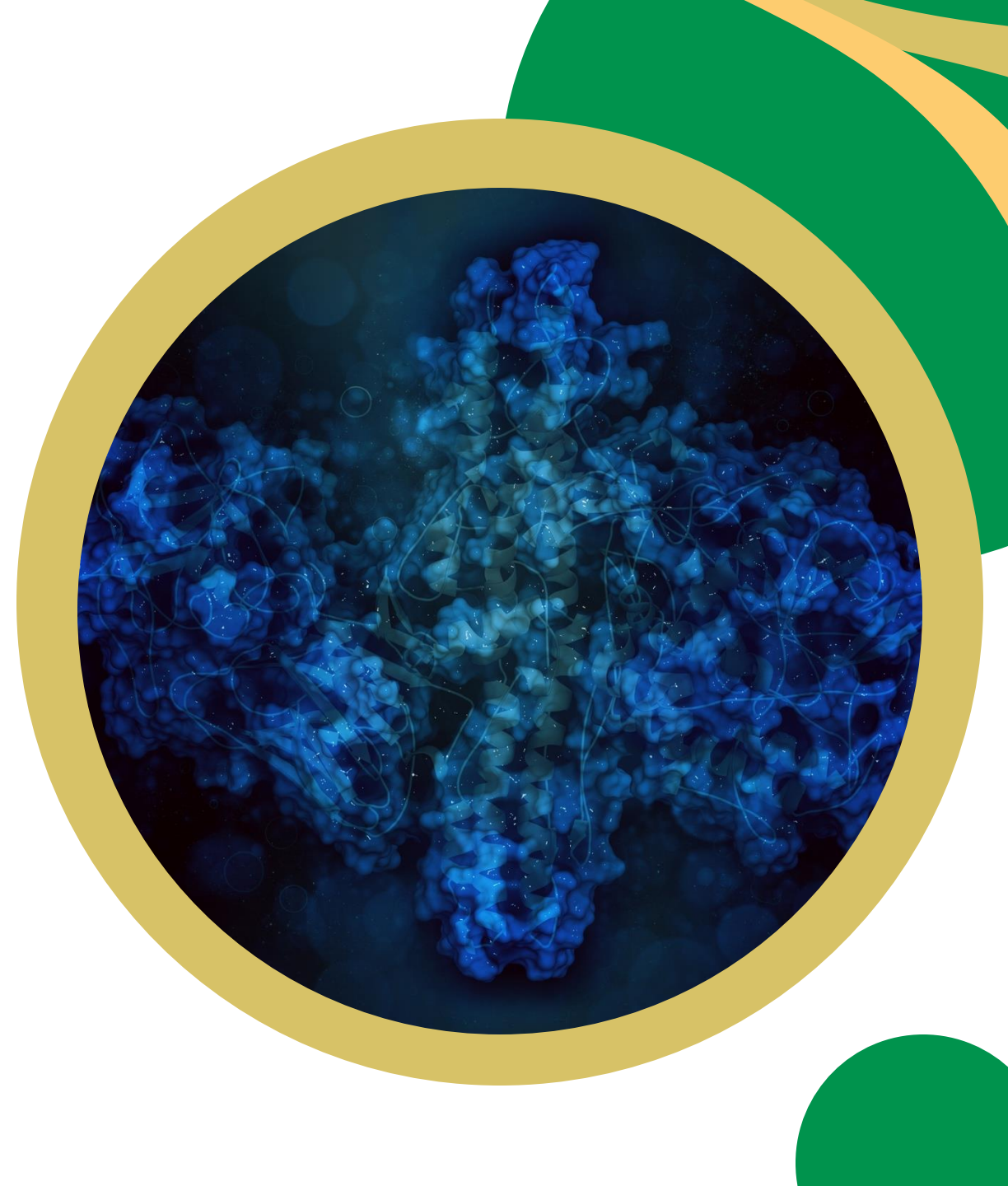




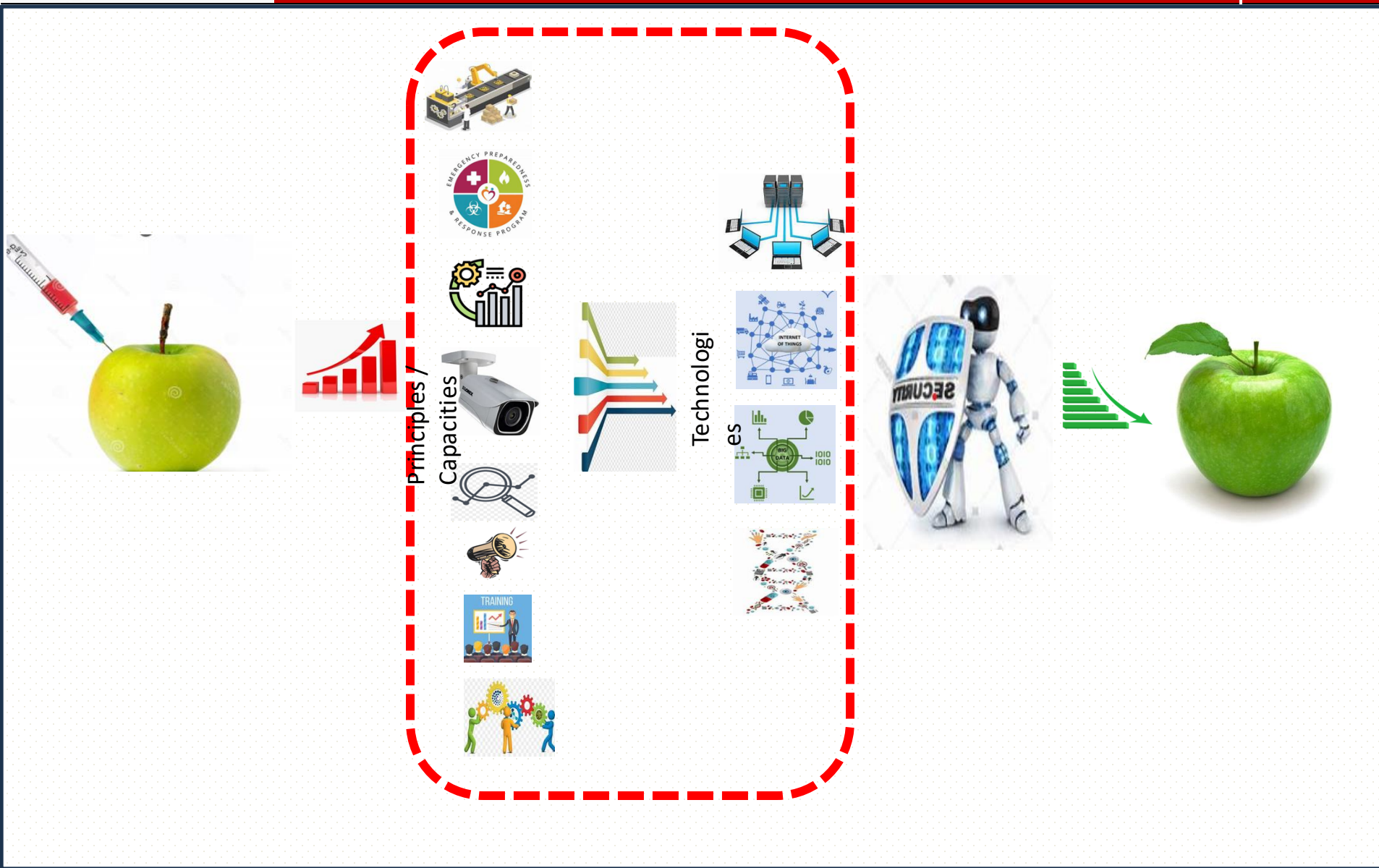
# 3MT

## Clive Kingsbury Competition

Student Name	Topic	College/University
Timothy Odoh	The Role of Technology in Reducing the Impact of Food Bioterrorism	University of Guelph









# 3MT

## Clive Kingsbury Competition

Student Name	Topic	College/University
Claudia Laiza	A Global Perspective on Fusarium Contamination: Climate-Induced Mycotoxin Risks in Cereal Crops	University of Guelph





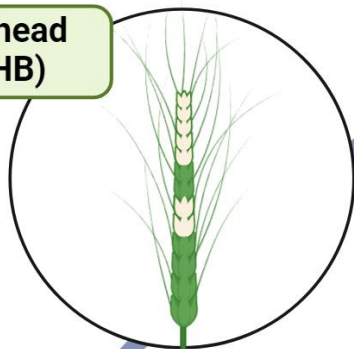
# A Global Perspective on Fusarium Contamination: Climate-Induced Mycotoxin Risks in Cereal Crops

**Claudia Laiza,**

Mina Kaviani, Helen Booker, Joey Bernhardt, Maria G Corradini



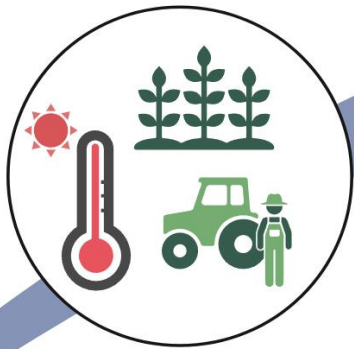
Fusarium head blight (FHB)



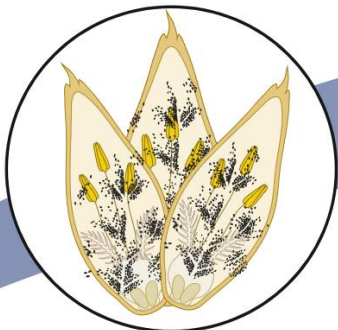
Fusarium graminearum species complex (FGSC)



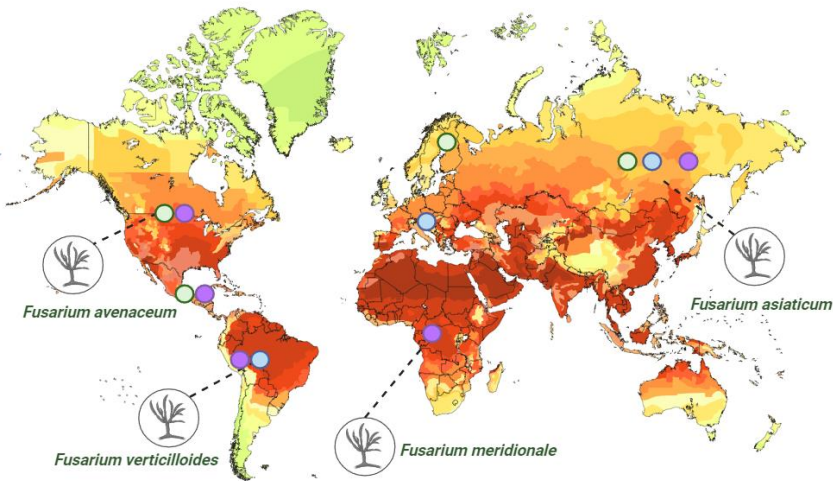
16 *Fusarium* spp.



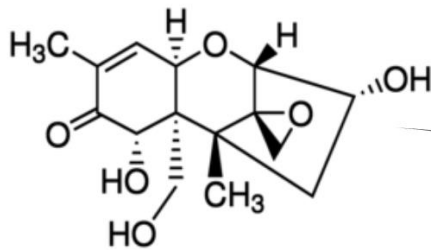
Environmental factors



Mycotoxin production



Deoxynivalenol (DON)



The **DONcast Model** is primarily for **wheat**

and for maize?



# 3MT

## Clive Kingsbury Competition

Student Name	Topic	College/University
Yakini Howell, Youkie Stagg	Evidence on the Effectiveness of UV-C Technology to Reduce Pathogens on Seaweed	Centennial College





# Evidence on the Effectiveness of UV-C Technology to Reduce Pathogens on Seaweed

Yakini Howell, Youkie Stagg  
Under the Advisory of Dr. Marina Ioselevich  
Food Science Technology, School of Engineering Technology and Applied Science, Centennial College

## Introduction

Improve guidance for Canadian regulatory bodies for seaweed food safety

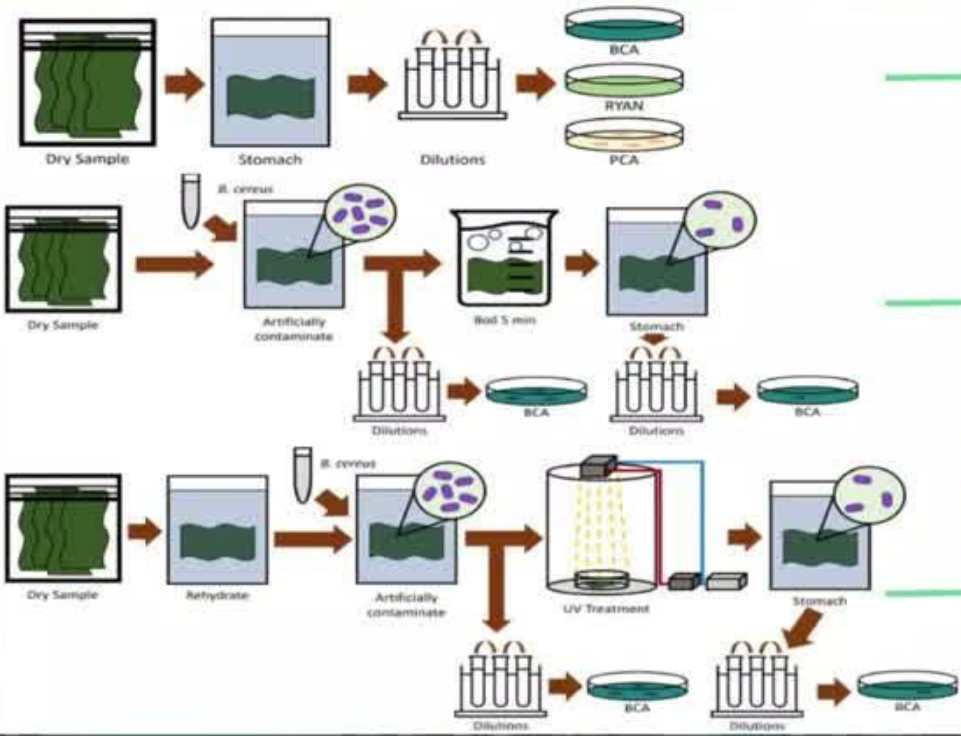
## Objectives

- A. Is the product safe?
- B. Impact of handling and preparation
- C. Inactivation of foodborne pathogens

## Conclusion

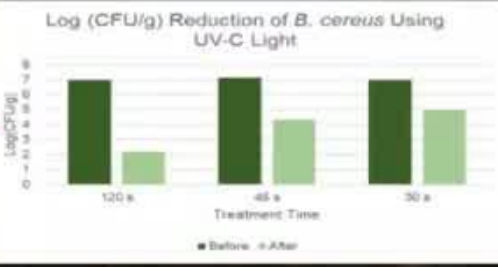
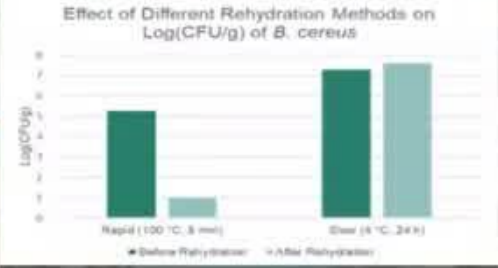
Common rehydration methods did not improve microbial load, but sufficient UV-C exposure inactivates *B. cereus* cells

## Methods



## Results & Discussion

Test	Media	CFU/g
TAPC	PCA	$1.0 \times 10^3$ EST
<i>B. cereus</i>	BCA	$<1.0 \times 10^1$
<i>A. media</i>	RYAN	$<1.0 \times 10^1$





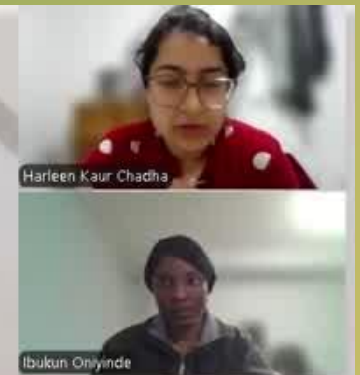
# 3MT

## Clive Kingsbury Competition

Student Name	Topic	College/University
Harleen Kaur, Ibukun oniyinde	The Effect of Sample Matrix on early detection of spiked <i>Pseudomonas aeruginosa</i> in Oats Using PCR and SPC	Centennial College







# Enhancing Food Safety: The Effect of Sample Matrix on early detection of spiked *Pseudomonas aeruginosa* in Oats Using PCR and SPC

Ibukun Oniyinde and Harleen Kaur Chadha  
Centennial College



# 3MT

## Clive Kingsbury Competition

Student Name	Topic	College/University
Sonal Saini	How changes in temperature influence the rate and extent of biofilm formation of <i>Pseudomonas licheniformis</i> in milk	Centennial College





How changes in temperature  
influence the rate and extent of  
biofilm formation of  
*Pseudomonas aeruginosa* and  
*Bacillus licheniformis* in milk

Three Minutes Thesis (3MT)  
Competition - 2024



# Introduction

# Objective

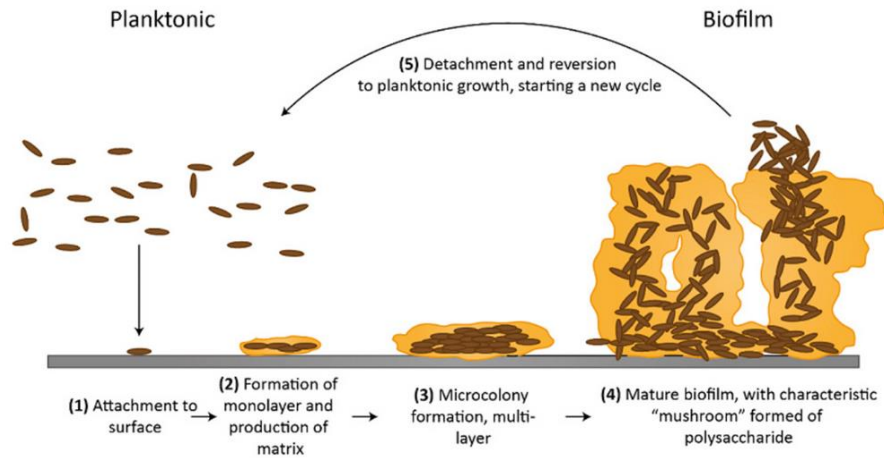
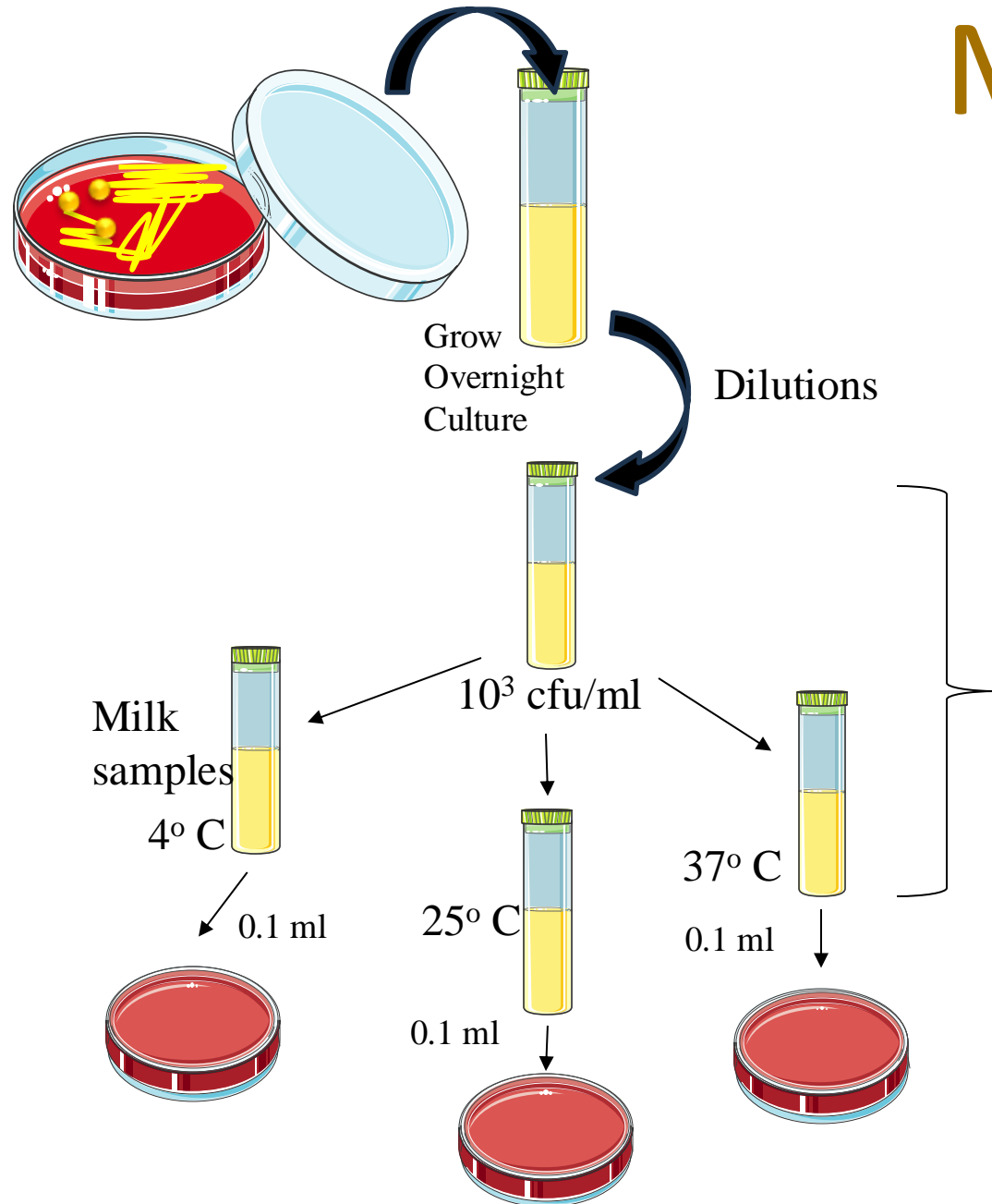


Figure 1. Schematic representation of a biofilm formation. (Biofilms and Their Role in Pathogenesis | British Society for Immunology, n.d.).

- To determine how changes in temperature (4°C, 25 ° C, and 37 ° C) influence the rate and extent of biofilm formation of *Pseudomonas aeruginosa* and *Bacillus licheniformis* in milk.

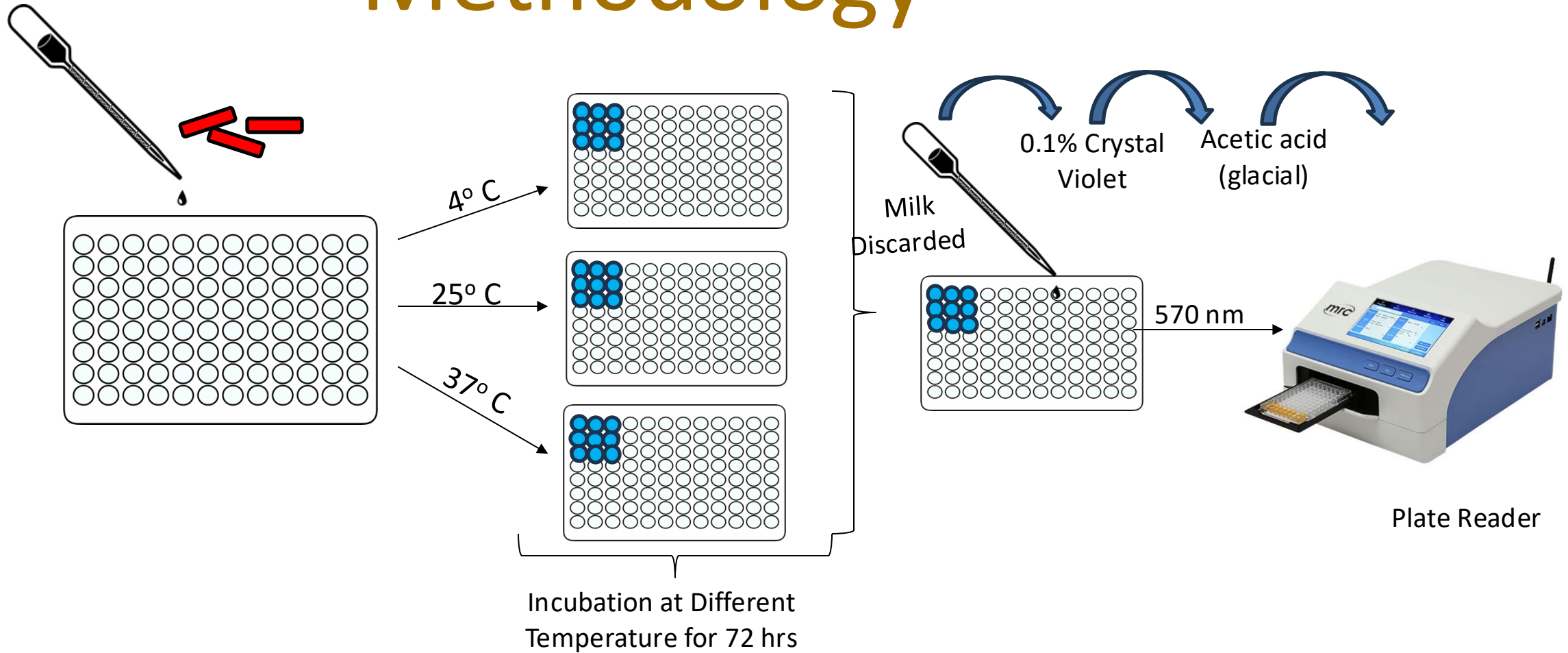


# Methodology





# Methodology



## Crystal Violet Assay



# Results

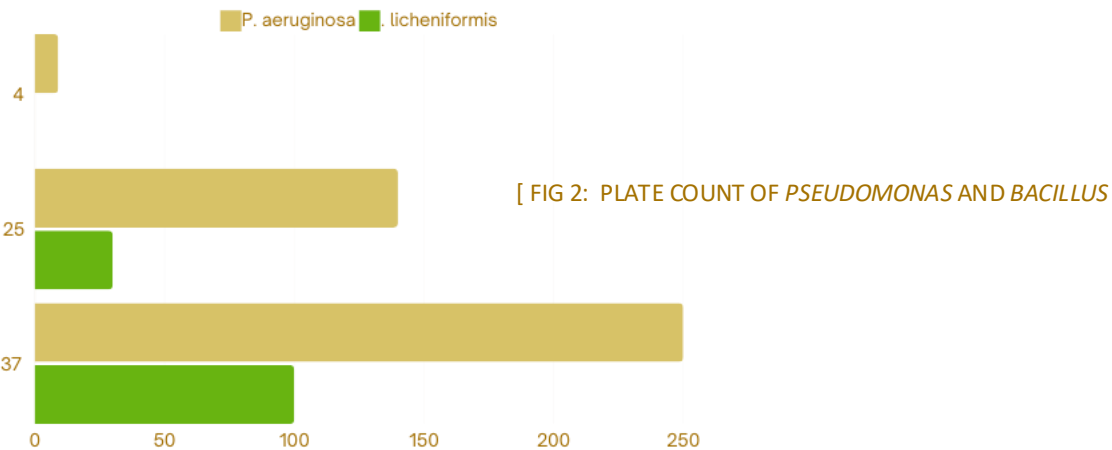
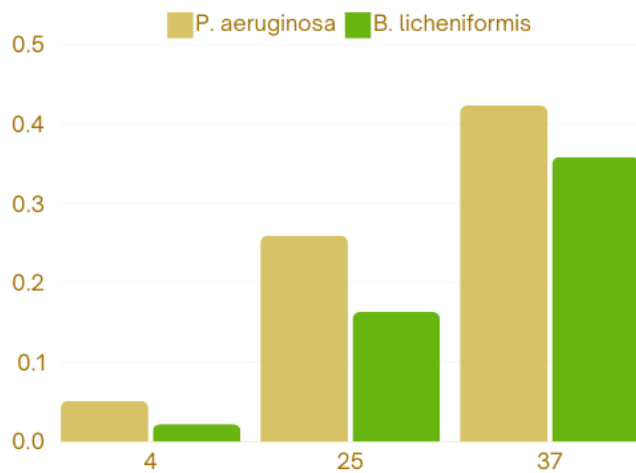


FIG 3:: OD OF *PSEUDOMONAS* AND *BACILLUS*



# Discussion

- From both the plate count and tube assay results it is evident that least biofilm production at **4 ° C** and maximum at **37 ° C**
- *P. aeruginosa* produces more biofilms at all temperatures- might be because of resistance by LPS layer and better diffusion of autoinducers for Quorum Sensing

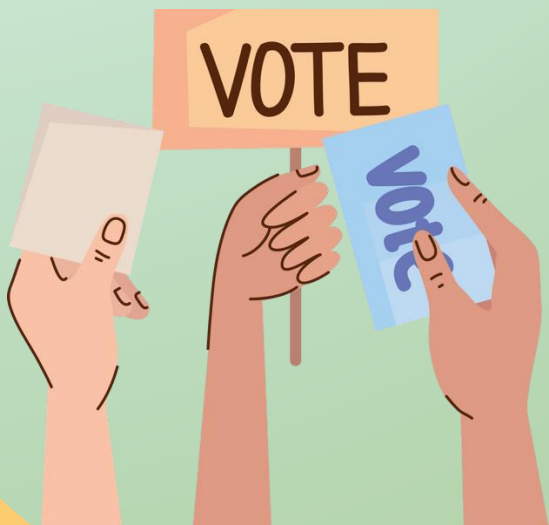
# Conclusion

Milk should be stored at 4 ° C (refrigerator) to increase it's self-life and decrease biofilm formation.



# 3MT

## Clive Kingsbury Competition



Scan the QR Code to Vote for the winner







# Lunch, Networking & Exhibits

12:25 pm – 1:25 pm





# Welcome Back

**Afternoon Moderator**

Birendra Rajapreyar, OFPA Director



**Network Name:** Bellvue Manor Guest  
**Password:** grandsalon





**3MT**

**Clive Kingsbury Competition**

**And the winner is.....**



# Harnessing Data Analytics for Proactive Food Safety Measures



**Allison Jorgens**

Sr. Director, Regulatory Affairs,  
Incident Management, QFR Centre  
of Excellence



**Jonathan Basha**

Sr. Manager, QFR Centre of  
Excellence



# Harnessing Data Analytics for Proactive Food Safety Measures



**Allison Jorgens**

Sr. Director, Regulatory Affairs,  
Incident Management, QFR Centre of Excellence

**Loblaw  
Companies  
Limited**



**Jonathan Basha**

Sr. Manager, QFR Centre of Excellence



Helping  
Canadians  
Live Life  
Well®

More than  
2,400

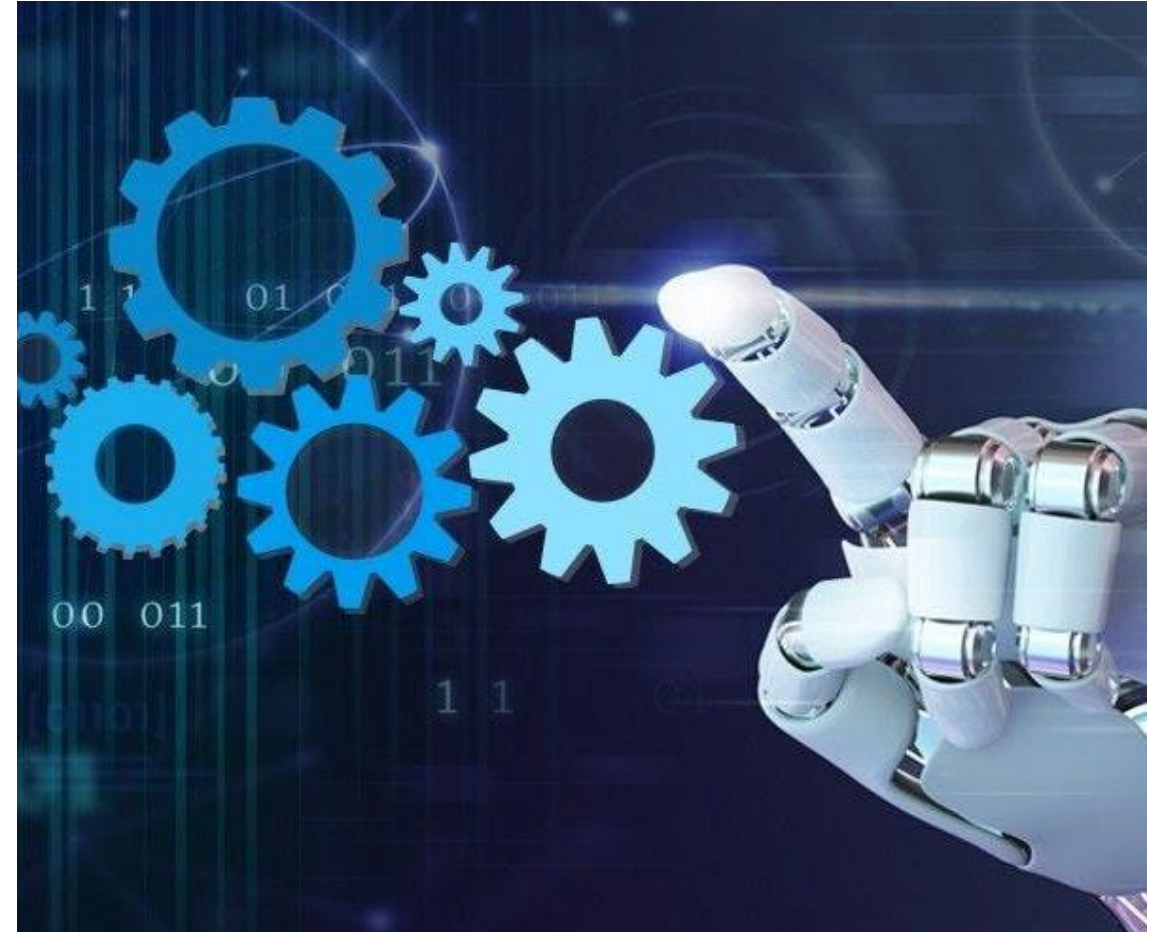
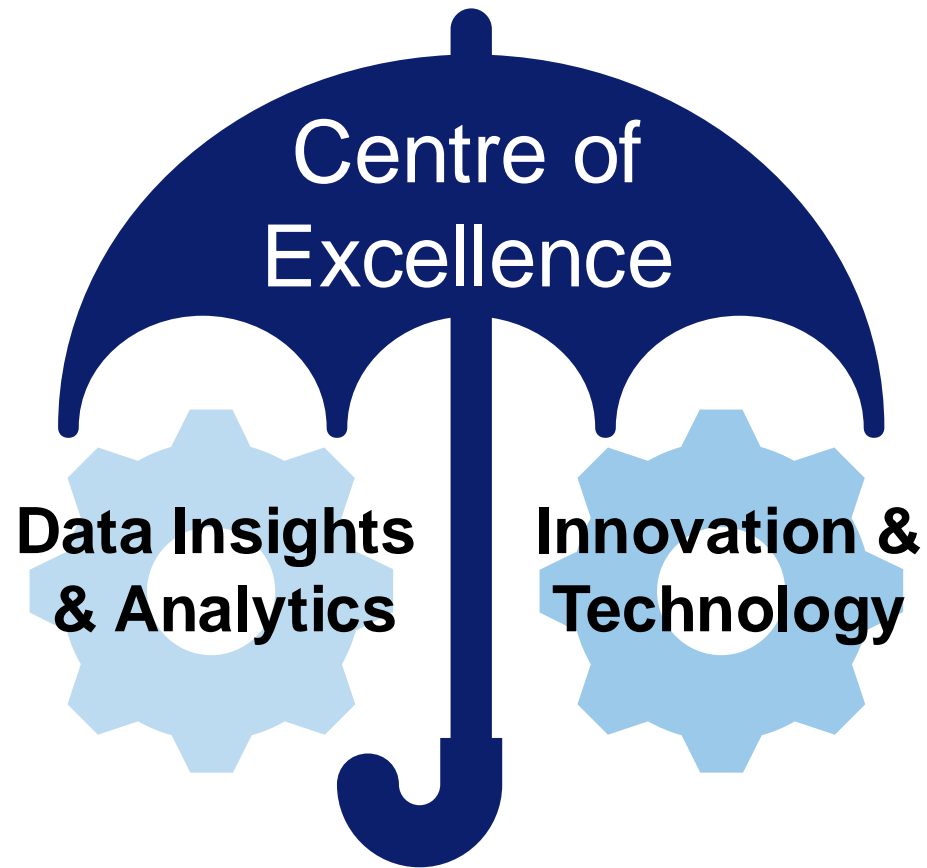
Stores across Canada

90% of  
Canadians

Live within 10 kilometres of one of our  
locations



*Today we'll take you on a journey to building a safer future by leveraging the transformative capabilities of data analytics through digital food safety monitoring, advanced quality metrics, and by optimizing AI for customer complaint management.*

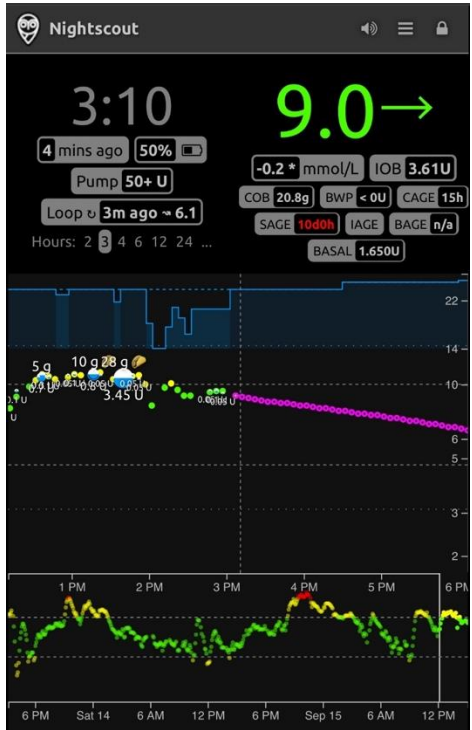
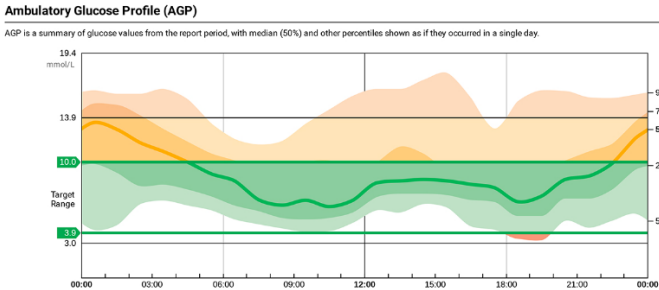






# The power of predictive analytics...

BLOOD SUGAR TRACKER													
WEEK OF:	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY						
Breakfast	before	after	before	after	before	after	before	after	before	after	before	after	before
Lunch													
Dinner													
Bedtime													
WEEK OF:	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY						
Breakfast	before	after	before	after	before	after	before	after	before	after	before	after	before
Lunch													
Dinner													
Bedtime													
WEEK OF:	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY						
Breakfast	before	after	before	after	before	after	before	after	before	after	before	after	before
Lunch													
Dinner													
Bedtime													





# How do we harness data analytics for proactive food safety measures?

---

1



2

3



**Reactive** —————> **Proactive** —————> **Real Time**



# Transformative Capabilities of Data Analytics Across the Supply Chain

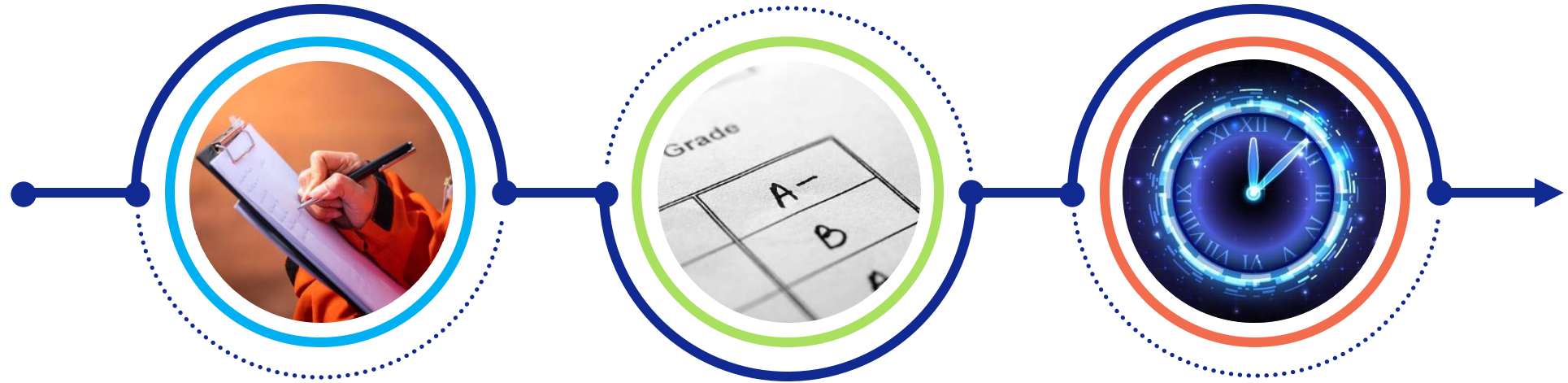


**Supplier** ➡ **Product** ➡ **Store**



# Harnessing Data Analytics Through Advanced Quality Metrics

---



**2<sup>nd</sup> & 3<sup>rd</sup>  
Party  
Audits**

**Scorecards   Real Time Data**



# Harnessing Data Analytics by Optimizing AI for Customer Complaint Management

---



**Customer  
Complaints**

**Machine  
Learning**

**Predictive  
Analytics**



# Harnessing Data Analytics Through Digital Food Safety Monitoring



**Paper  
Logs**

**Digital Food  
Safety**

**New  
Connections**



# The Future of Food Safety Data



## Artificial Intelligence

Negatives and Positives  
New Applications

## Horizon Scanning

Predictive Analytics  
Detection Methods

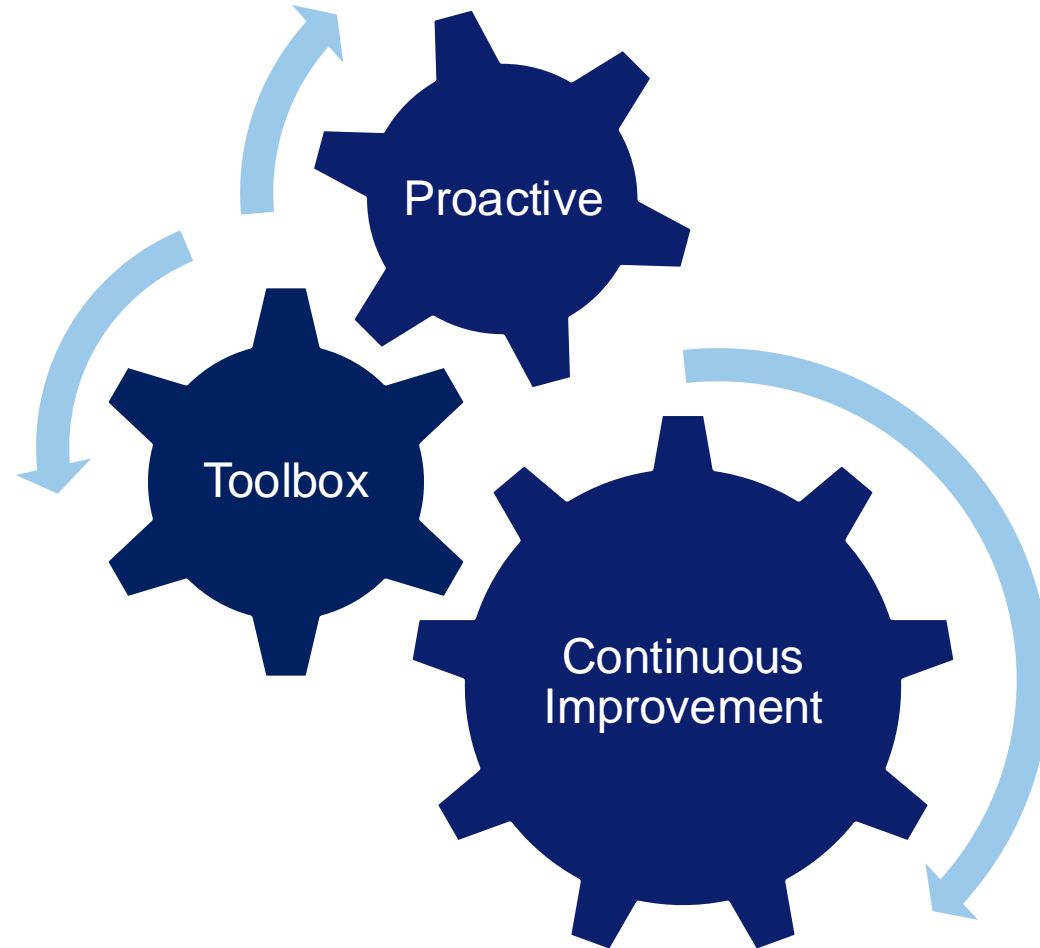
## Prevention & Mitigation

New Data Sources  
Predictive Modeling



# 3 Things to Remember...

---





# Roundtable Guide

2-3 minutes	<ul style="list-style-type: none"><li>• Pick a facilitator from your group.</li><li>• The facilitator welcomes participants and introduces the process, and with the group's input, selects one topic for discussion (topics listed below).</li></ul>
20-25 minutes	<ul style="list-style-type: none"><li>• The facilitator presents three specific questions for the selected topic (see questions on reverse side).</li><li>• Each participant has 2-3 minutes to share their insights on the questions (not all participants must answer every question).</li></ul>
5 minutes	<ul style="list-style-type: none"><li>• Summarize key takeaways.</li><li>• Write down key insights and solutions.</li><li>• Discuss next steps or potential actions to implement these ideas in your organization.</li></ul>

## Topics

- 1 Food Compliance: Explore the challenges of adhering to global food safety regulations. Discuss strategies for companies to maintain compliance amid evolving technologies and products.
- 2 Food Surveys: Examine how food surveys reveal consumer preferences and behaviours. Discuss how businesses can leverage this data to shape products, marketing, and industry practices.
- 3 Food Technology: Dive into recent advancements in food technology, including AI, robotics, and alternative proteins, and their impact on production, safety, and sustainability.
- 4 Food Safety Culture: Discuss how companies can foster a strong food safety culture through leadership, employee engagement, and continuous improvement.
- 5 Foodborne Illness: Learn about the prevention and management of foodborne illnesses, including recent research and best practices for responding to outbreaks and contamination.
- 6 Recalls: Understand the dynamics of food recalls, focusing on effective management, consumer communication, and protecting brand reputation while ensuring food safety.







# AFTERNOON NUTRITION BREAK

3:00 pm – 3:30 pm



# Strengthening Food Safety: The Positive Impact of GFSI Audits



**SONNY BRAR**  
OFPA Director



**JESSICA BURKE**  
Delivery Partner  
Program Manager and  
Americas Lead, BRCGS



**PIUS GASSER**  
North American  
Representative, IFS



**HEATHER GALE**  
North American  
Representative, IFS



**JACQUELINE SOUTHEE**  
  
North American  
Representative, FSSC



**STEFANIE SONNEVELD**  
  
Business Development  
Representative, SQFI



**What are the Benefits of GFSI audits and why are they important, internally, and externally?**



**What are your thoughts on Customer Audits, and why do Customers have to audit if you already have GFSI Audit completed.**



**When it comes to Unannounced audits....**





# OFPA 67<sup>th</sup> Annual General Meeting & Announcements

- New Business & President's Address
- 2023 AGM Minutes Approval & OFPA Constitution
- OFPA 2024 & 2025 Board of Directors
- OFPA Financial Review





# **2023 AGM Minutes Approval and 2025 Constitution**



# 2024 OFPA Financial Update

- 2024 Summary & 2025 Proposed Budget Review
- 2024 Financial Status Update

By Arlene Larson



## 2023 Summary and Proposed Budget Review

REVENUE	2023 Achieved	2024 Proposed
Membership fees	\$ 11,717.70	\$ 12,186.41
Fall Meeting	\$ 28,436.64	\$ 29,574.11
Spring Meeting	\$ 22,911.50	\$ 23,827.96
Social Night	\$ 8,191.59	\$ 8,519.25
Webinar and other	\$ 5,843.19	\$ 6,076.92
Government Assistance - Ontario Small Business Support Grant	\$ -	\$ -
Interest income	\$ 209.79	\$ 218.18
	<b>\$ 77,310.41</b>	<b>\$ 80,402.83</b>
EXPENSES	2023 Achieved	2024 Proposed
Administration	\$ -	\$ -
Scholarships and Awards	\$ 2,200.00	\$ 2,288.00
Advertising and Promotion	\$ -	\$ -
Insurance	\$ 1,401.97	\$ 1,458.05
Fall Meeting	\$ 12,712.77	\$ 13,221.28
Spring Meeting	\$ 10,782.04	\$ 11,213.32
Social Night	\$ 2,927.27	\$ 3,044.36
Office and General; Board Meeting	\$ 4,179.84	\$ 4,347.03
Professional Fees		\$ -
Memberships and conference	\$ 1,891.63	\$ 1,967.30
Bank charges, interest and merchant fees	\$ 2,385.75	\$ 2,481.18
Consulting	\$ 1,500.00	\$ 1,560.00
Website	\$ 23,617.67	\$ 24,562.38
Accounting	\$ 1,500.00	\$ 1,560.00
	<b>\$ 65,098.94</b>	<b>\$ 67,702.90</b>
EXCESS OF REVENUES OVER EXPENDETURES	\$ 12,211.47	\$ 12,699.93
Net ASSETS, end of 2023		\$ 51,520.00
Forecasted ASSETS,end of 2024		\$ 54,096.00



# 2024 Financial Update

1

Forecasted

2

Actual  
(end August 2024)

3

Estimate after Fall  
Event



Excess of revenue over expenditures

\$ 12700

\$ 54195

\$ 8722



Assets, end of 2024

\$ 54096

\$ 98245

\$ 52772



# 2024 BOARD OF DIRECTORS



Jessica Burke  
*President*



Marin Pavlic  
*Vice-President*



Arlene Larson  
*Treasurer*



Ellen Gravi  
*Director*



Brett Dooley  
*Director*



Birendra Rajapreya  
*Director*



Kajam (KJ) Kunarajasingam  
*Director*



Sonny Brar  
*Director*



Hanna Sharafi  
*Director*



Irem Aydogdu  
*Director*



Darshan Gautre  
*Director*



Shrikant Indulkar  
*Director*



Dharamdeo Singh  
*Student Director*



# *Student Volunteers!*



**ISHA CHAVAN**



**SAHIB REEN**



**HARNISHA PATEL**



**SONAL SAINI**



**RANU SUBEDI**



**JEMIL KAPADIA**



# 2025 BOARD OF DIRECTORS



Marin Pavlic  
*President*



Jessica Burke  
*Past President*



Ellen Gravi  
*Director*



Birendra Rajapreya  
*Director*



Kajam (KJ) Kunarajasingam  
*Director*



Sonny Brar  
*Director*



Hanna Sharafi  
*Director*



Irem Aydogdu  
*Director*



Darshan Gautre  
*Director*



Shrikant Indulkar  
*Director*



Dharamdeo Singh  
*Student Director*



Open Position  
*Director*



Open Position  
*Director*





# Networking Mixer

5 - 7 pm







**Thank You**  
For Coming







ONTARIO FOOD PROTECTION ASSOCIATION

# 67th Annual Food Safety Conference & Social Mixer

## Day -2



September 30, 2024  
October 1, 2024



Bellvue Manor, 8083 Jane St  
Concord, ON





ONTARIO FOOD PROTECTION ASSOCIATION

# Registration & Breakfast

7:30am – 8:30am



# Thank you to our sponsors !

## Elite



## Platinum



## Diamond



## Gold



## Silver



## Micro





# Thank you to our exhibitors!





# Welcome Back

Day 2 Moderator

Ellen Gravi , OFPA Director



Network Name: Bellvue Manor Guest  
Password: grandsalon





# Door Prizes



Network Name: Bellvue Manor Guest  
Password: grandsalon



# Raffle

Cash Only

**\$10 – 2 tickets**

**\$20 – 5 tickets**



**Network Name:** Bellvue Manor Guest  
**Password:** grandsalon



## And don't forget about our Passport

1. Visit our Sponsors
2. Obtain a Stamp
3. Add your name and place your passport in the box close to the stage.

Runner Up: IAFP Membership  
Grand Prize: Registration to OFPA's 2025 Meeting



Network Name: Bellvue Manor Guest  
Password: grandsalon



# 2024 Charity

## Toronto Council Fire Native Cultural Centre

Child & Family Support/Well-being Sector  
Prenatal Nutrition Program  
Family Nutrition Program



September 30<sup>th</sup>, 2024 - Spirit Garden Project  
(Truth and Reconciliation Commission of  
Canada Call to Action 82)



**Network Name:** Bellvue Manor Guest  
**Password:** grandsalon



# CFIA – Where Are We Now and What's on the Horizon

Pamela MacDonald

Executive Director, CFIA Operations Branch





# Annual Food Safety Conference- Ontario Food Protection Association

Pamela MacDonald  
Executive Director  
Inspection Support Division

October 1, 2024

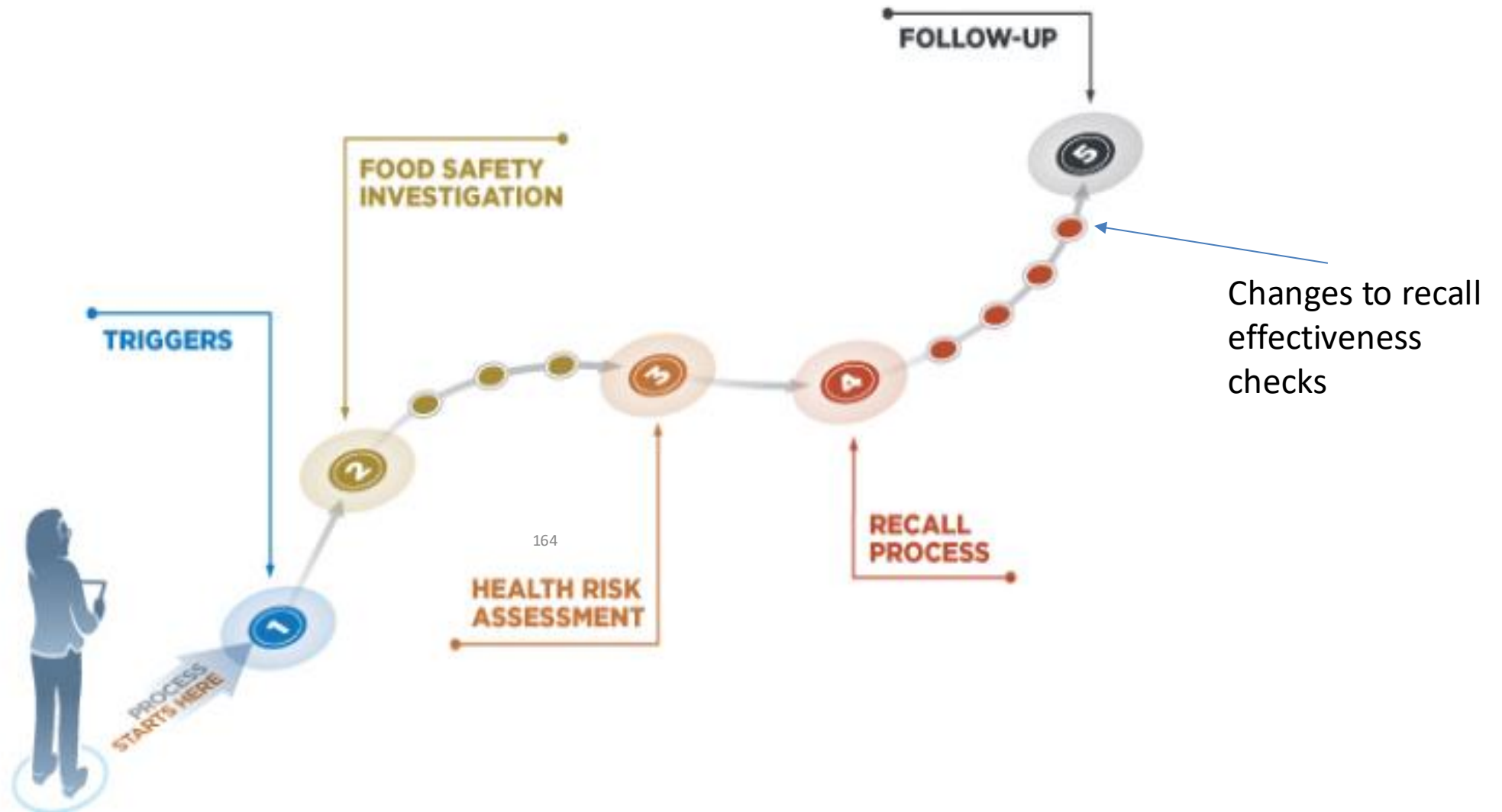


# Outline

- To provide an overview of:
  - Food safety investigation and recall process review
  - Recall statistics
    - By trigger, by hazard and by fiscal year
  - Food safety issues in 2023-2024
  - Policy and procedure changes and updates
    - Recall effectiveness checks, supplemented foods, SFCA and *Listeria* policy



# Canada's food safety investigation and recall process







165

## Food safety investigation & Recall statistics

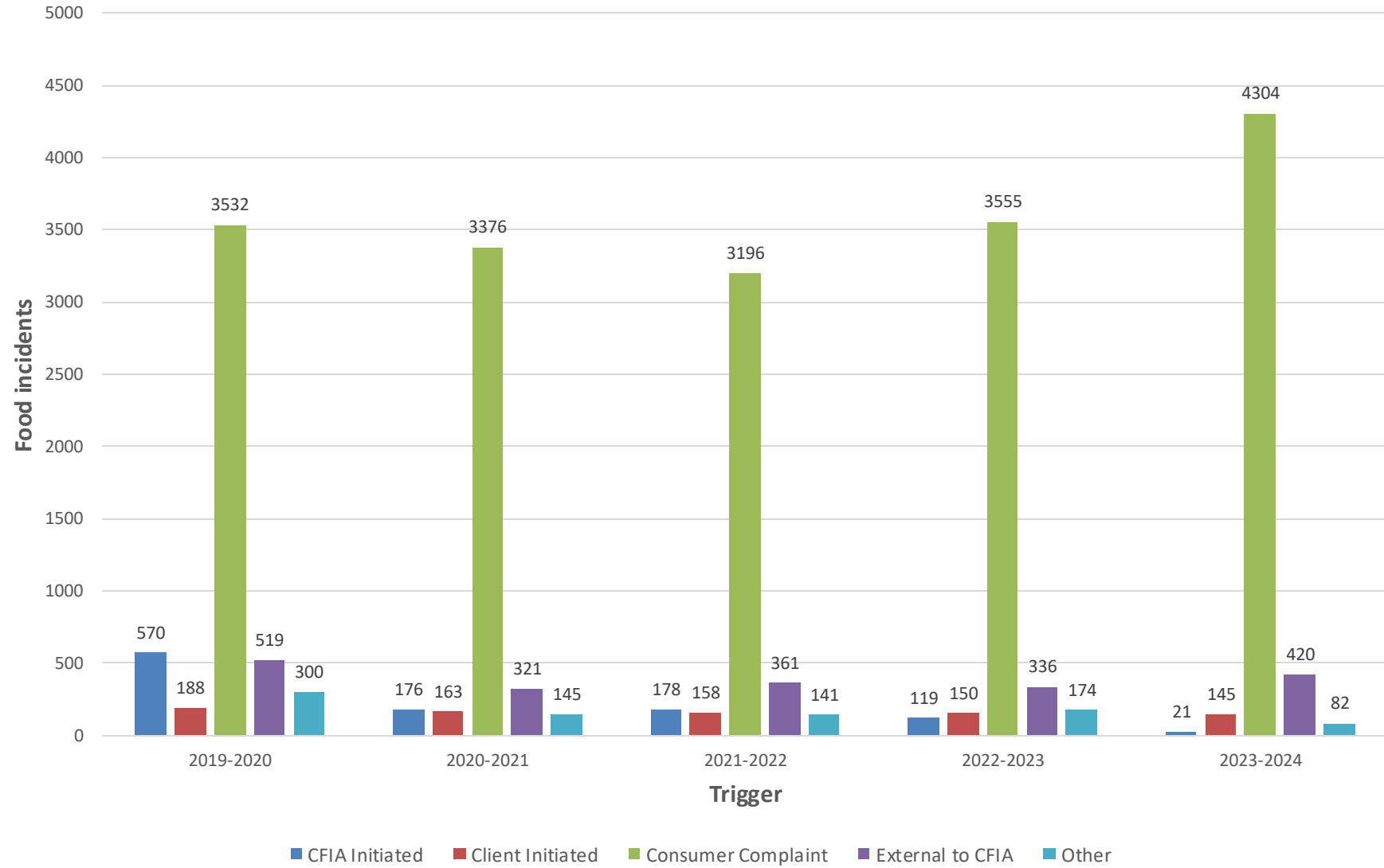
by trigger

by hazard

by fiscal year

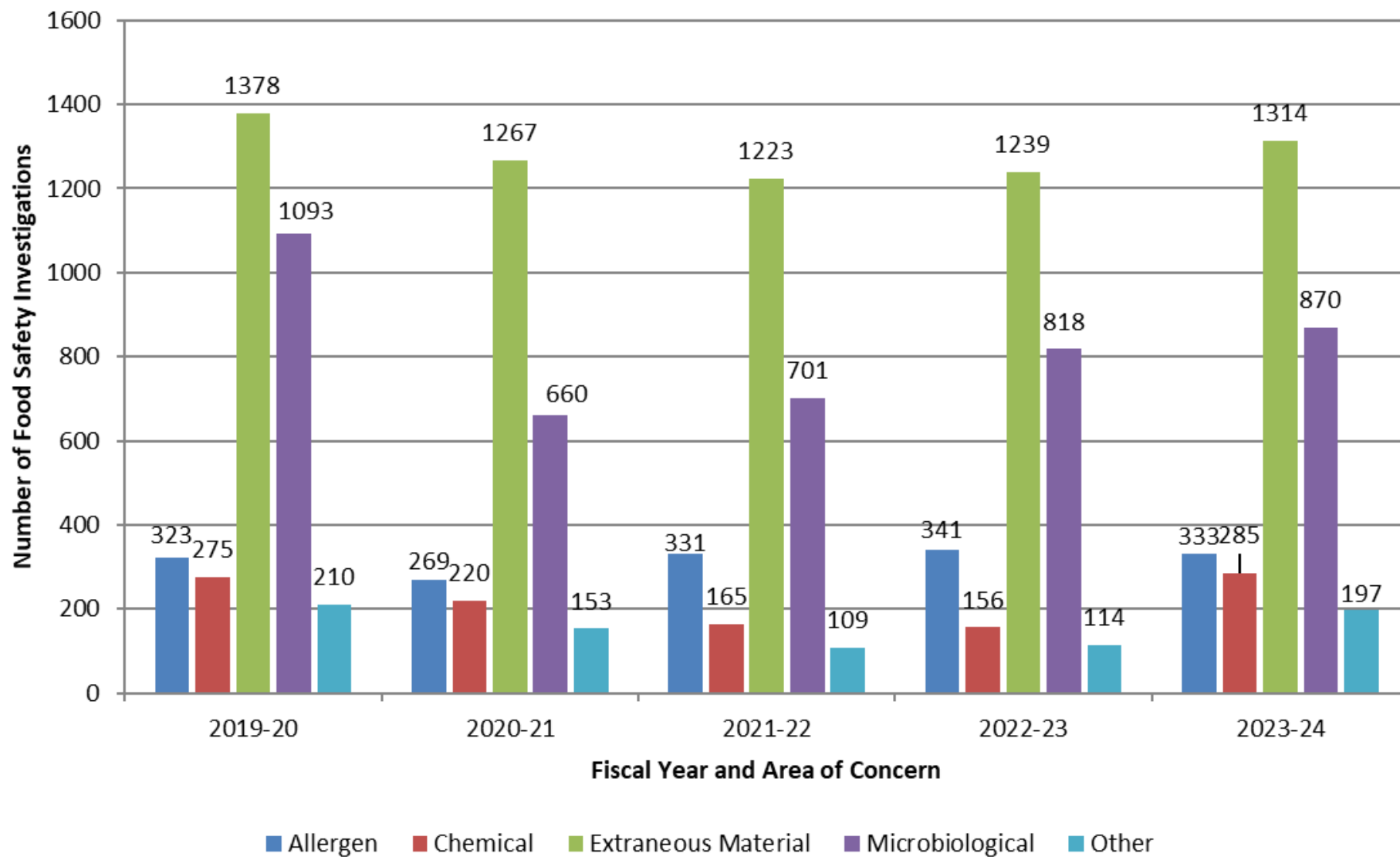


## All Incidents by Trigger per Fiscal Year from April 1, 2019 to March 31, 2024



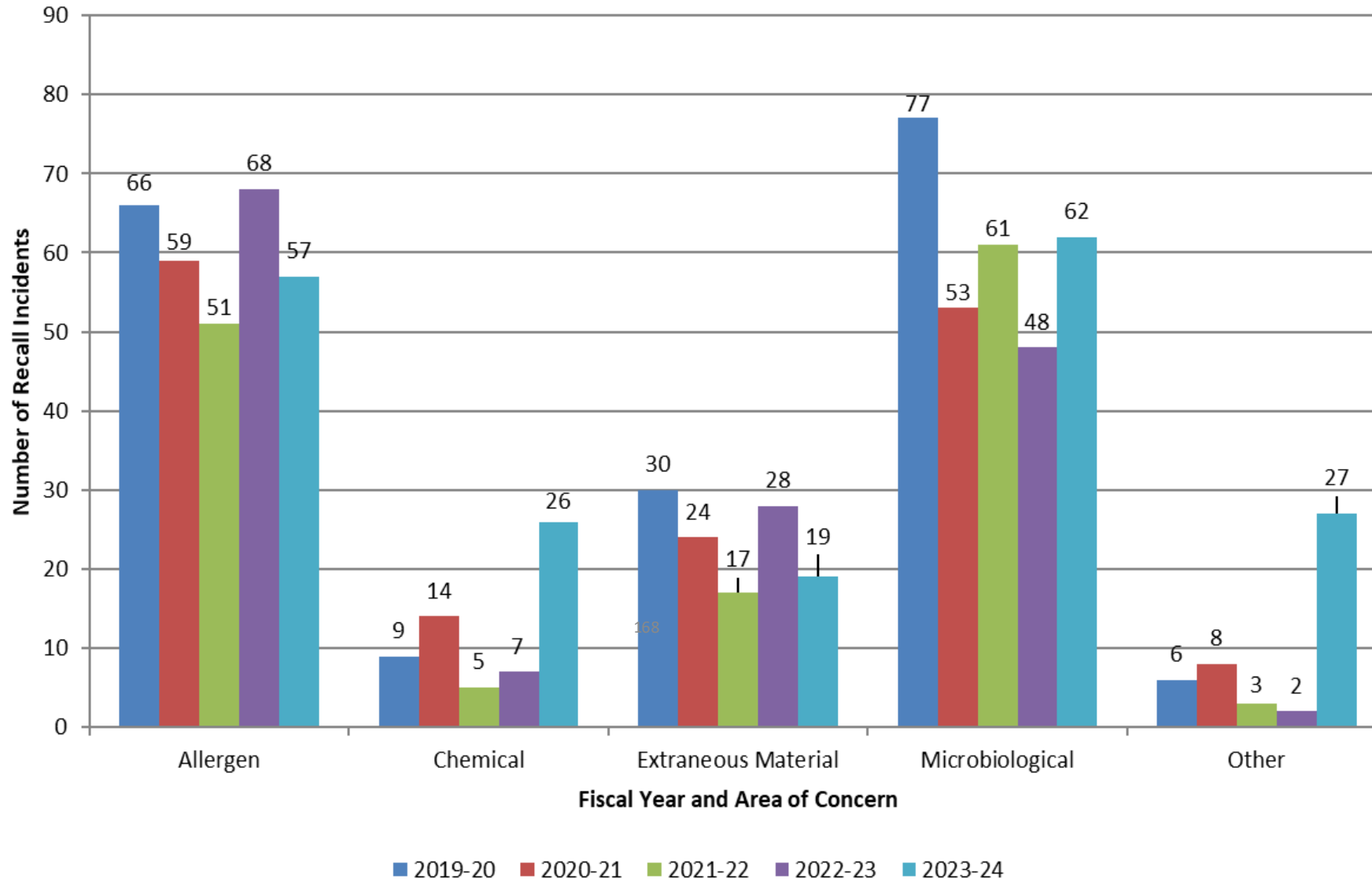


## Food Safety Investigations by Hazard from April 1, 2019 to March 31, 2024





**Recall Incidents by Hazard per Fiscal Year from April 1, 2019 to March 31, 2024**







## Food safety issues from 2023-2024



# Food safety issues in 2023-2024

- Outbreak of Salmonella infections linked to cantaloupes
- Caffeinated energy drinks (CED)
  - As a retailer, it is important that you take action to ensure that the CEDs you are selling meet Canadian food safety standards.
- Food safety controls for raw enoki mushrooms
  - Issued guidance to control the risk of occurrence of *Listeria monocytogenes*.
- Milk sampling and testing for highly pathogenic avian influenza (HPAI) in Canada
  - Over 1,211 retail milk samples from across Canada. All samples have tested negative for HPAI fragments, with no evidence of disease in dairy cattle detected in milk in Canada.
- Outbreak of listeriosis infections linked to plant-based beverages.





## Policy changes & updates



## Recall Verification Procedure

- The following are the main changes since April 2020:
  - Class I recalls, less recall verification checks (RECs)
    - Example, 500 clients decrease from 120 to 70 RECs with new procedure.
  - Class II recalls with a Food Recall Warning or due to an outbreak, less RECs
    - Example, 500 clients decreases from 70 to 45 RECS with new procedure
  - Class II recalls that do not have a Food Recall Warning or are not due to an outbreak
    - Review of the recalling firm's activities only, no RECs
  - Class III recalls, no recall verification activity
- \*Exception to these is for both class I and II, all effort should be made to reach 100% of the clients serving vulnerable populations.



# Supplemented Foods

- The new supplemented food regulations were promulgated in July 2022.
- Products that had a valid Temporary Marketing Authorization (TMA) at the coming into force of the regulations or received a written notice from Health Canada are eligible for the transition period until December 2025.
- Supplemented foods are prepackaged foods with added supplemental ingredients: vitamins, minerals, amino acids and caffeine
- These supplemented foods may now be subject to food recalls.





## *Safe Food for Canadians Act (SFCA)*

- On January 15, 2019, the SFCA came fully into force along with the Safe Food for Canadians Regulations (SFCR).
- The CFIA is required to conduct a review of the provisions and operations of the SFCA every 5 years to determine if it meets its objectives. These objectives include:
  - improving food safety and consumer protection oversight across all food commodities
  - having effective, streamlined, and strengthened legislative authorities across food commodities
  - enhancing market access opportunities for Canadian food industry.
- The review included a broad public consultation from March 27 to May 27, 2024. In the fall of 2024, the CFIA will publish a *What We Heard Report*<sup>174</sup> that summarizes the feedback.
- The Agency intends to publish a report to Parliament in the spring of 2025 that summarizes the results of the review.



# Policy on *Listeria monocytogenes* in RTE foods (2023)

- Health Canada has revised its 2011 Policy on *Listeria monocytogenes* in Ready-to-eat (RTE) foods.
- The revised [Policy on Listeria monocytogenes in ready-to-eat foods \(2023\) - Canada.ca](#) was published at the end of March 2023 and has come into effect on October 1, 2023
- Updates include: incorporation of our outcome-based regulation on foods (SFCR), clarification of the definition of RTE foods excluded from the policy, and expectations for foods specifically produced for vulnerable populations
- A six month transition period was given to industry to review and adjust their controls.



# Policy on *Listeria monocytogenes* in RTE foods (2023)

- The CFIA is supporting the implementation of the revised policy and has updated the industry guidance to align with the updated HC policy. Food operators are now expected to follow the updated policy and associated Industry guidance
  - [Control measures for Listeria monocytogenes in ready-to-eat foods - Canadian Food Inspection Agency \(canada.ca\)](https://www.canada.ca/en/food-inspection-agency/services/food-safety/listeria-monocytogenes-ready-to-eat-foods.html)
- Verification of the control measures implemented by RTE food operators (manufacturers, importers and exporters) continues via our regular inspection activities.
- Imported food needs to meet the same food safety requirements as food produced in Canada.
- Foreign suppliers need processes in place for testing for *L. monocytogenes* and should use our policy as a guideline.



Thank you!

Questions?





## **Elite Sponsor Presentation**





# Train and Retain: Enhancing In-House Training



## Track A

RENATA MCGUIRE

Global Training Program Manager for Food, NSF



# Effective Communication for Food



## Track B

Safety  
LAURA TOMA

Manager of Learning & Development, Compass Group





# Train and Retain: Enhancing In-House Training

**RENATA MCGUIRE**

Global Training Program Manager for Food, NSF





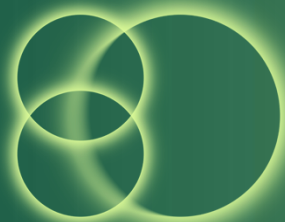


# Train and Retain: Enhancing In-House Training

**Renata McGuire**

Global Training Program Manager,  
Food and Management Systems, NSF





Celebrating 80 Years  
of Improving Human  
and Planet Health



# Introducing NSF

The trusted global authority for health standards,  
testing, certification, consulting  
and training for food, water, health products, and  
the environment.





# Our Mission

**Since 1944, we are dedicated to Improve Human and Planet health.**

This mission is carried out by thousands of team members around the world, including microbiologists, toxicologists, chemists, engineers, and environmental and public health professionals.





# What Happens...

NSF

- Before training?
- During training?
- After training?





“Learning is a process,  
not an event.”

Elliott Masie



# Adult Learners

- Need to know the reason for learning
- Experience is the basis for learning
- Responsible for their decision on education
- Immediate relevance to them
- Self-motivated (internal vs. external)
- Problem centered vs. content





# Characteristics of Adult Learners

Adults have:

- Life experiences and knowledge
- Varied educational backgrounds
- Varied attitudes towards learning
- A high comfort level with the predictable
- A fear of failure or looking foolish





1

**Align training needs to the  
business needs.**



# What Must Learners Be Able To **Do**

What the learner  
can do

What the learner  
needs to do



# Start with the Basics: Is it a Training Issue?



**Are knowledge and skills the root cause?**





TO DO

~~Finished~~ X



Is training just one more thing  
to check off a list?



2

**Set learning expectations  
before the training begins.**





# Prepare for Training

Smith-Jentsch et al. (2001)



# Notify Learners



Communicate clear expectations about the training.



Describe training as an “opportunity” without overselling.



Inform employees about any post training follow-up.



Communicate the importance of training.







**Make it  
Personal**



3

**Commit to the  
training.**



# How Often to Train? It Depends

NSF

cost

practice

need

person

type





# Training at the Moment of Need

Learning for the  
first time



1

Acting on the  
knowledge



3

Changing how things  
are done



5

Expanding your  
knowledge



2

Problem-solving



4

Bob Mosher and Conrad Gottfredson





APPLY

SOLVE

CHANGE

70+%

of all workplace learning  
is done informally



# Knowledge, Skills and Attitude



Knowledge



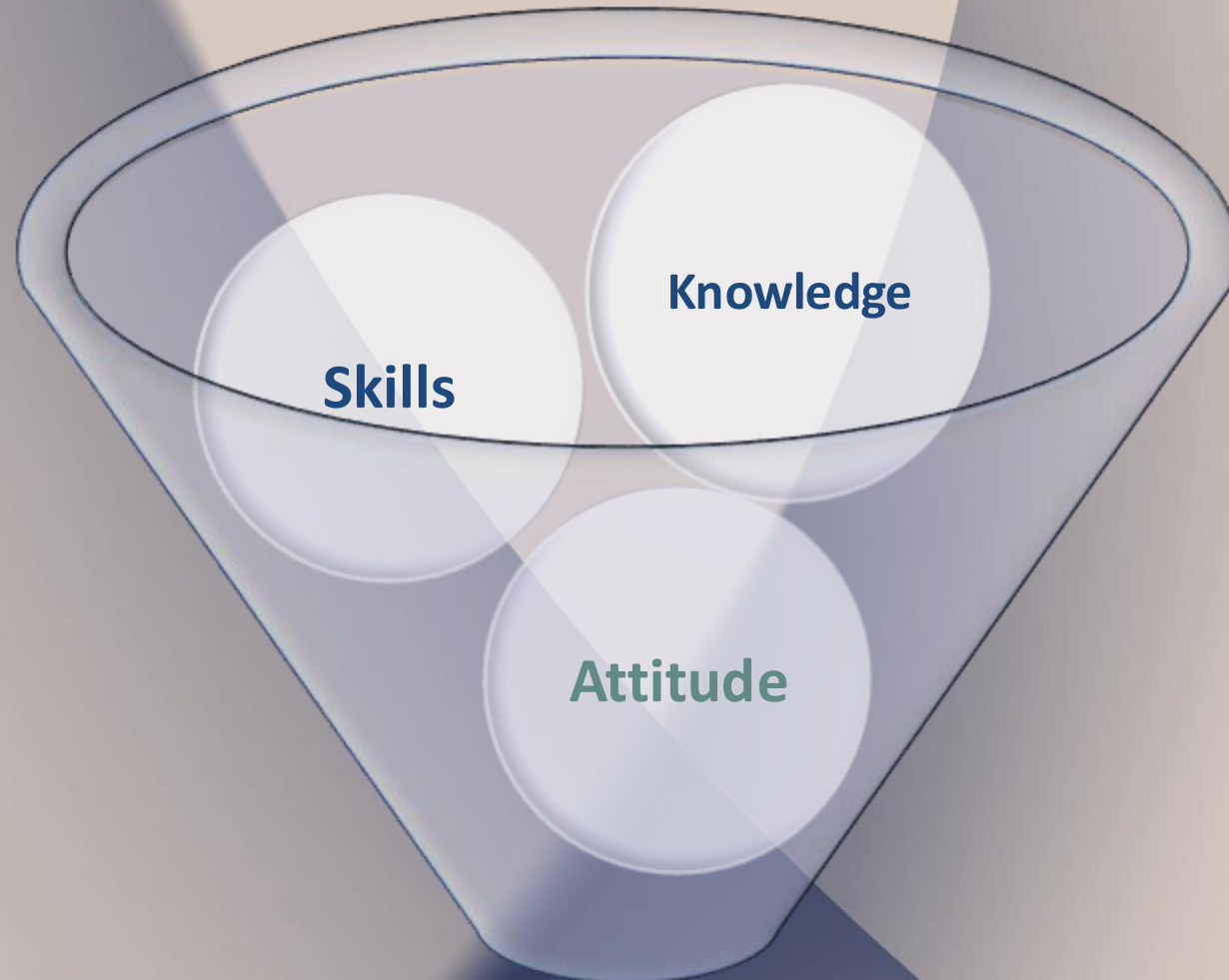
Skill



Attitude







**Competence**



# Telling is NOT Training

## Risk Requirements - Guidance

- Its clear that Risk-Based-Thinking has to be embedded in the Processes
- Clause 4.4 – Determine Risks and Opportunities at the process level as processes are defined and then take appropriate actions to address
- Clause 6.1 – Consider Organizational context (vision and strategy) and the needs of stakeholders to identify risks to the business and mitigate them.

## 5.1 Leadership and Commitment

- a.) Take accountability of the effectiveness of QMS
- b.) Ensuring that Q Policy and Objectives are compatible with its strategic direction
- c.) Ensuring the integration of QMS requirements into their business processes.
- Promoting awareness of the Process Approach and Risk Based Thinking
- Ensuring that resources are available
- Communicating the importance of QMS and conformance to QMS requirements

## 4.3 Example Scope - Automotive

- ABC company provides steel stampings and welded assemblies to the GM and Ford. The scope of processes and outsourced purchased products are simple, and represent only 10% of the company's responsibility. Our scope is limited to the Detroit, Michigan area. Our site includes 1234 Main Street, and a shipping yard.

## 5.1 Leadership and Commitment

- a.) Take accountability of the effectiveness of QMS
- b.) Ensuring that Q Policy and Objectives are compatible with its strategic direction
- c.) Ensuring the integration of QMS requirements into their business processes.
- Promoting awareness of the Process Approach and Risk Based Thinking
- Ensuring that resources are available
- Communicating the importance of QMS and conformance to QMS requirements

## 5.3 Roles, Responsibilities and Authorities

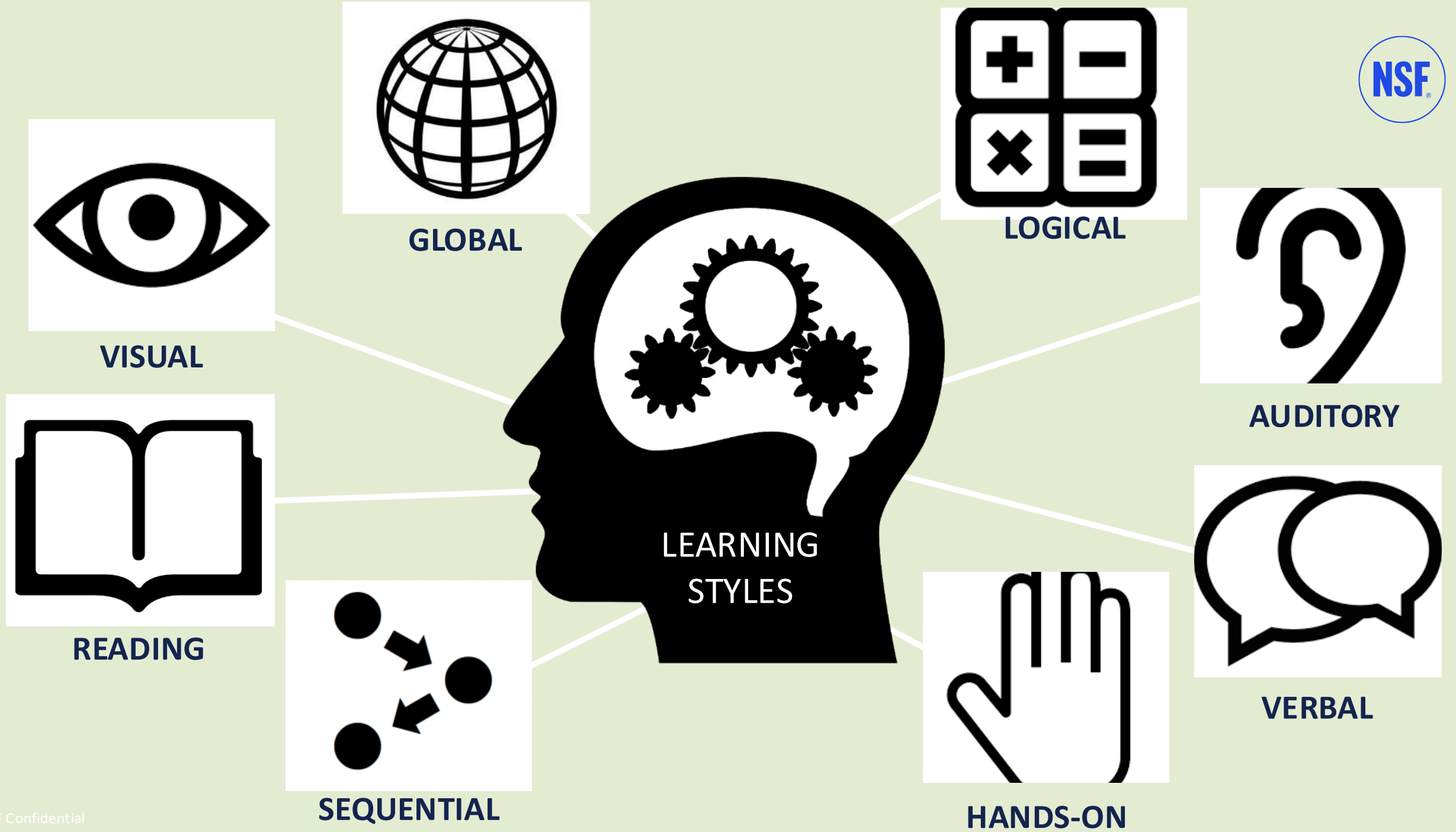
- Top Management shall assign the responsibility and authority for...
  - a.) ensuring QMS conformance
  - b.) ensuring process deliver intended outputs
  - c.) reporting on the performance of QMS... To Top Mgt.
- Promoting a customer focus
- Ensuring integrity of the QMS when changes occur
- Note that a defined "Management Representative" has been removed. (although the tasks remain)

available  
of QMS and conformance to QMS

## ISO 31000:2009 Risk Definitions

- Risk
- Risk Management
- RM Framework
- RM Policy
- Risk Attitude
- RM Plan
- Risk Owner
- RM Process
- Establishing Context
- External, Internal Context
- Communication, Consultation
- Stakeholder
- Risk Assessment
- Risk Identification
- Risk Source
- Event, Consequence
- Likelihood
- Risk Profile, Risk Analysis
- Risk Criteria
- Risk Evaluation
- Risk Treatment
- Control
- Residual Risk







# Cognitive Overload





Need  
to know

Nice  
to know

Need  
to know

Need  
to Access

Nice  
to know



# Best Practices for Skills Training

## Focus

Focus on the objectives:  
What learners will DO

## Mimic

Mimic real-world experiences

## Encourage

Encourage failure

## Create

Create a safe environment for learners to make mistakes

Practice, Practice, Practice!



# Best Practices for Attention/Attitude

---

- Ask questions
- Use stories and examples
- Use humor
- Have them work
- Connect to prior learning
- Help them understand **WHY**
- Include errors
- **Opportunities to make mistakes!**





# The Importance of Emotion

---

- Emotion compels attention
- Attention drives learning and memory



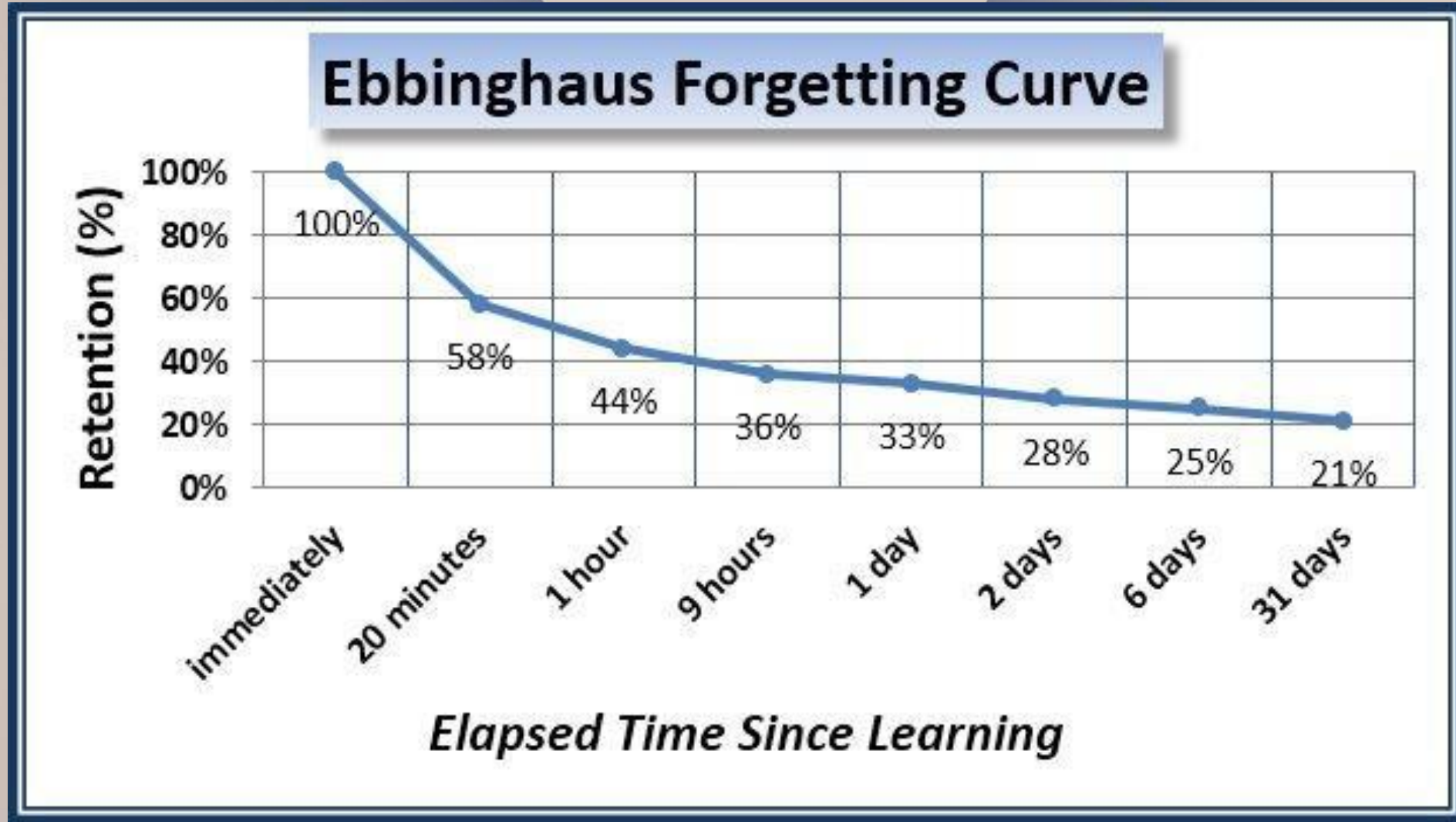


4

Practice.



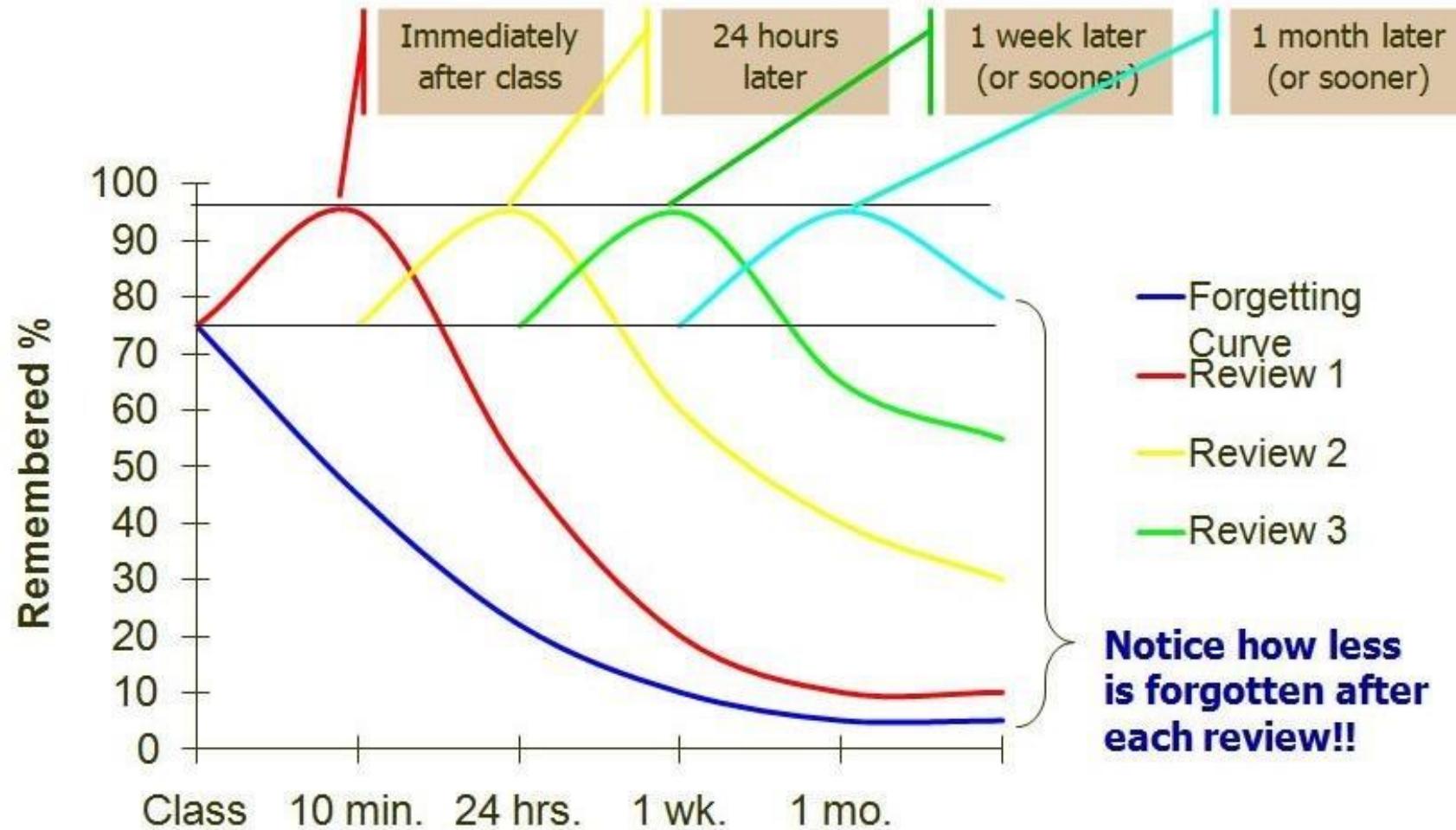
# Learning and Memory





# The Importance of Repetition

## Overcoming the Curve





## Transfer of Training

- “A supportive post training environment affects employees’ mindset, which in turn will determine whether they use what they have learned in training.”





# Posters, Symbols and Slogans

- Keep them simple
- Communicate the desired behavior
- Change them often enough to prevent desensitizing





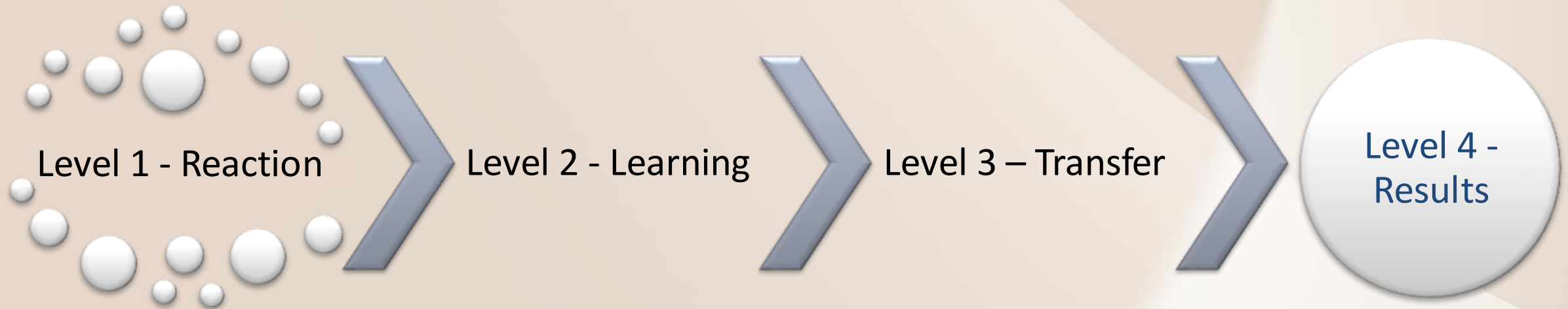
## Evaluating the Training

Have we met the learning objectives?





# The Four Levels of Evaluation





# Level 1: Reaction

- The learner's response to the training
- Observation, listening, feedback form





# Level 2: Learning

## Knowledge



## Skill



## Attitude





# Level 3: Transfer

- Was the learner impacted by the training?
- Can the new learning be used on the job?
- Will it become a habit over time?





# Level 4. Results



Did training lead to better work performance?  
Did training solve the problem?



# Remember the Objectives

- Training is not provided so that participants can do well during instruction
- The desired outcome is improved performance on the job





# Summary



**3 things you remember from this session**



**2 ways you can apply what you have learned**



**1 strategy you can use in the next week or month**







# NSF Training Membership Program

Congratulations!  
You've joined some of the biggest names in the food and beverage industry by becoming an NSF Training Member.

You now get exclusive access to and preferential pricing on NSF's premium training service offerings on [nsf.org](https://www.nsf.org).

## Benefits of Membership

- Discounts on all public instructor-led training courses (virtual and in-person) and eLearning

## What to Expect in Our Courses

- Access to industry and subject matter experts
- Relevant, interactive and applied training
- Comprehensive course material that may include electronic presentations, workbooks and tools
- Networking opportunities
- Certificate of Accomplishment or Certificate of Attendance
- Consistent, high-quality material and delivery method



## How to Take Advantage of Your Membership\*

### Register for courses and special events

- The membership price is visible on every course description.
- Enter your membership number during the registration process so you receive the membership discount.

**Membership Number**  
**MEM I A F P 2 0 2 4**

**Ready to get started? Register today at**  
[nsf.org/training/area/food-safety](https://www.nsf.org/training/area/food-safety)



Contact  
Us



THANK YOU

[rmcguire@nsf.org](mailto:rmcguire@nsf.org)  
[www.nsf.org](http://www.nsf.org)





# NUTRITION BREAK

10:25 am – 10:55 am





# Door Prizes



Network Name: Bellvue Manor Guest  
Password: grandsalon



# Raffle

Cash Only

**\$10 – 2 tickets**

**\$20 – 5 tickets**



**Network Name:** Bellvue Manor Guest  
**Password:** grandsalon





## Track A

# Internal Audits: A Fundamental Tool for Continuous Improvement of Food Safety Systems



**SHANJA GNANATHURAI**

QA System Analyst, Maple Lodge Farms



**LISA MOODY**

Senior QA Manager, Audit Programs, Maple Lodge Farms



# Sanitary Designs

**ERIC VAN DER BEEK**

Sector Specialist Manager for Food and Beverage North America, Diversey

## Track B







## Internal Audits: A Fundamental Tool for Continuous Improvement of Food Safety Systems



**SHANJA  
GNANATHURAI**

QA System Analyst, Maple Lodge  
Farms



**LISA MOODY**

Senior QA Manager, Audit  
Programs, Maple Lodge Farms



# Internal Audits: A Fundamental Tool for Continuous Improvement of Food Safety Systems

Lisa Moody – Sr. QA Manager, Audit Programs

Shanja Gnanathurai – QA Systems Analyst

OFPA Food Safety Conference – October 1, 2024



# About Me...



Dairy



Protein



Bakery



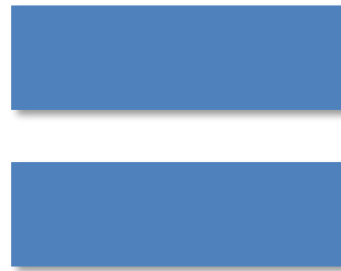
A wide-angle photograph of a deep, arid canyon. A river flows through the center of the canyon, its water a deep blue-green color. The canyon walls are composed of layered, reddish-brown rock formations, showing signs of erosion. The sky is a pale, clear blue. The overall scene is one of a vast, rugged natural landscape.

Different Industries...

Same Gaps



# 1. Audit and Inspection are Interchangeable





# GFSI Benchmarking Requirements version 2020.1

## Inspection

- Examination of a product, process, service, or installation or their design and determination of its conformity with specific requirements or, on the basis of professional judgment, with general requirements.

## Audit

- Systematic, independent and documented process for obtaining objective evidence and evaluating it objectively to determine the extent to which the audit criteria are fulfilled.



In other words...

## Inspection

- A physical review of a product, process or facility to assess what is happening at a moment in time

## Audit

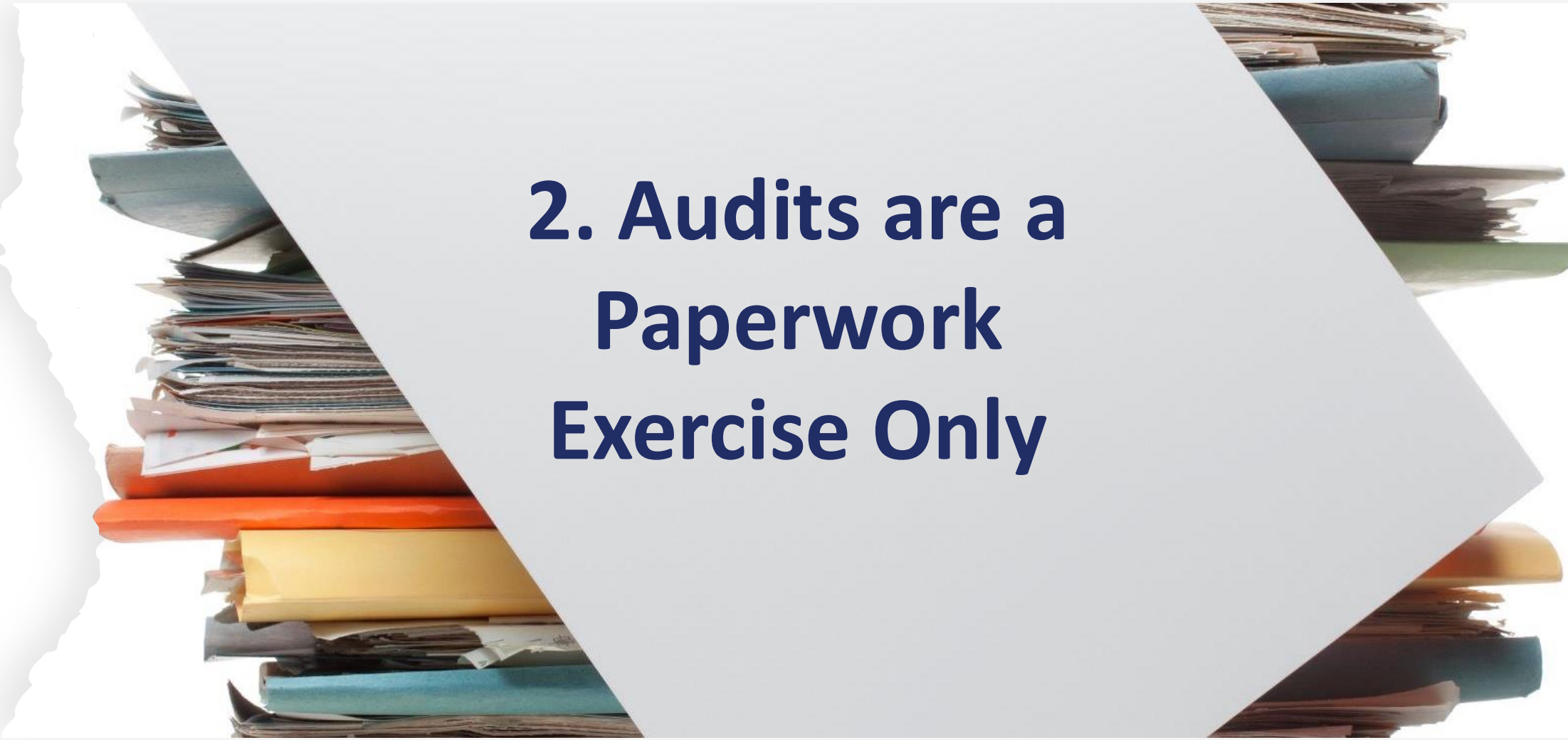
- A systematic evaluation of programs, physical condition, documents and records to determine both compliance and non-compliance to set standards.





**Inspections are a critical PART of the Internal Audit, but they are not the WHOLE Internal Audit.**





## **2. Audits are a Paperwork Exercise Only**



# Break the Chains to Desks and Filing Cabinets



- Watch processes in action
- Talk to the people completing the work
- Ensure “high process stress” times are captured:
  - Changeovers
  - After breaks
  - High vacation periods (Temporary or Back up personnel)





**Floors, Walls  
and Ceilings**

**3. Audits are focused only on “surface”  
level and fail to look at the root of issues**





**Internal  
Audits  
MUST  
follow  
the Audit  
Trail**





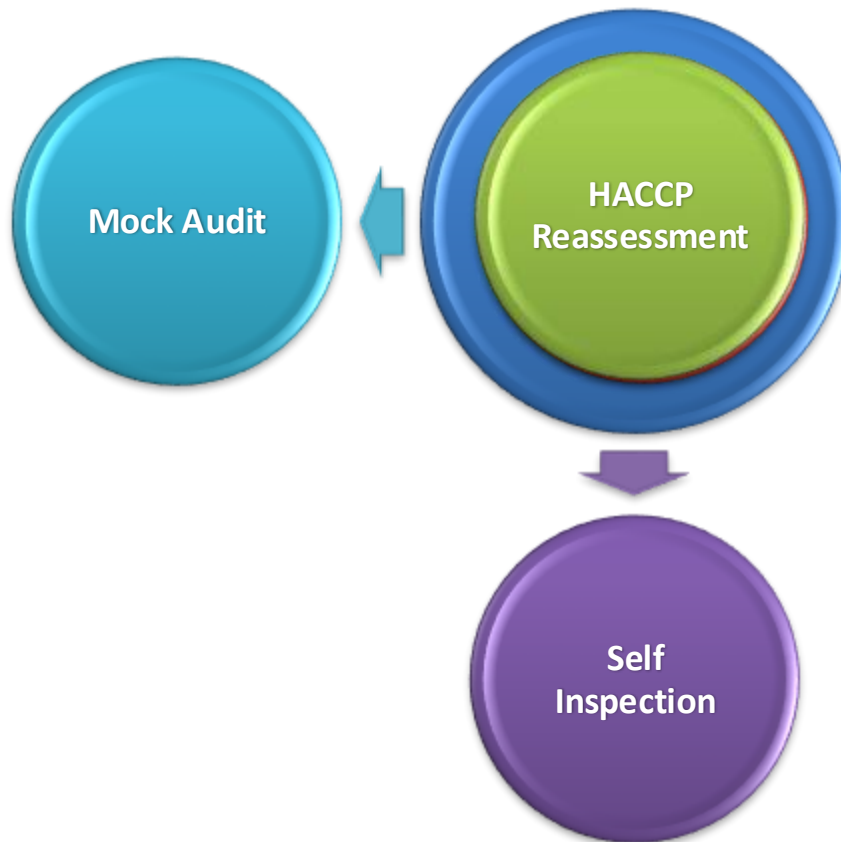
#### 4. Multiple audits of the same FSMS





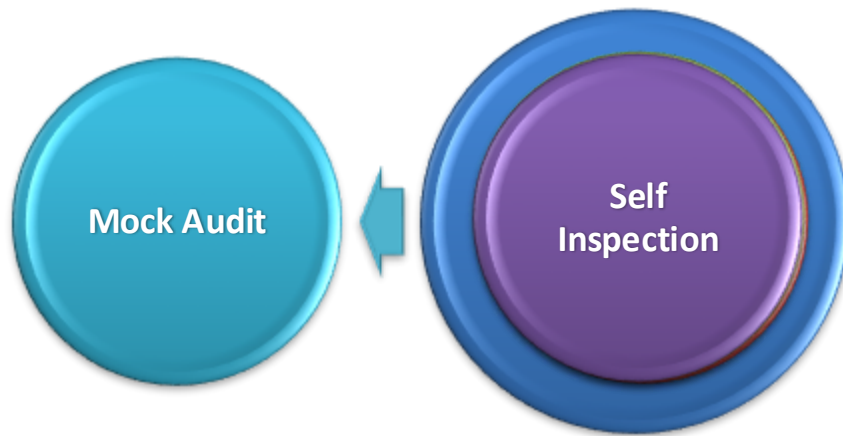
#### 4. Multiple audits of the same FSMS





#### 4. Multiple audits of the same FSMS





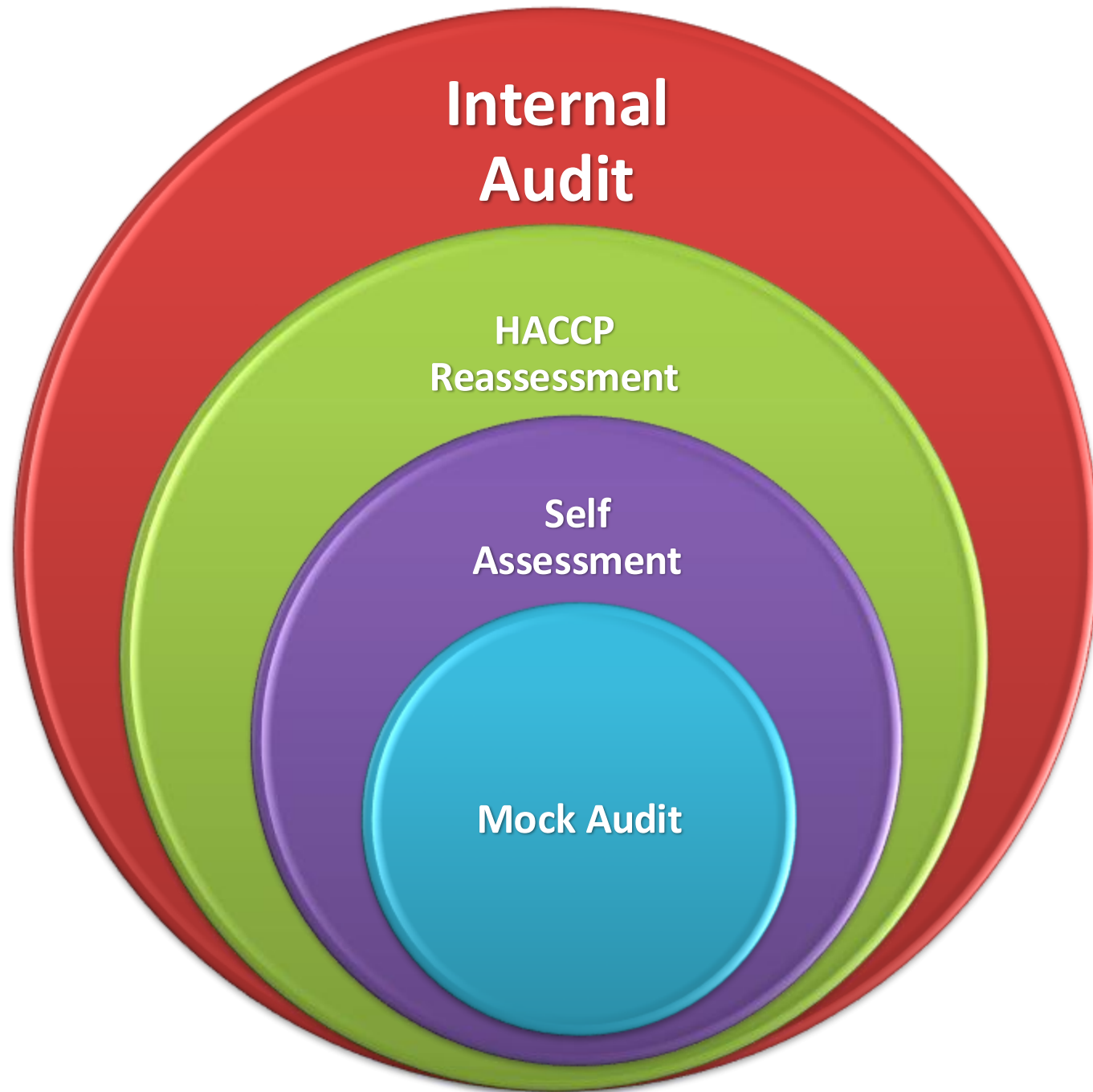
#### 4. Multiple audits of the same FSMS





#### **4. Multiple audits of the same FSMS**









LIKE DUH



# Training







**“If our auditor doesn’t bring it  
up, why should we?”**





**“If our auditor doesn’t bring it up, why should we?”**





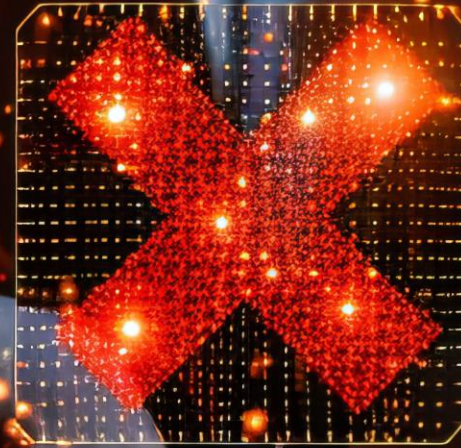
# FOOD SAFETY CULTURE

**“If our auditor doesn’t bring it  
up, why should we?”**



## Maple Lodge Farms BRCGS Minor Non-conformance:

- Not enough objective evidence cited
- Audit reports lacked detail
- Incomplete/not following audit schedule











# Scheduling and Measuring



# Trending and RCA



# Training



# Onsite Review



## Training



### **3 modules:**

- Introduction to Internal Audit
- Inspections
- Conducting and Planning an Internal Audit

### **Delivered to multiple functions**

- Production/Operations
- Maintenance
- Quality Assurance

### **Combination of eLearning and In-class modules**



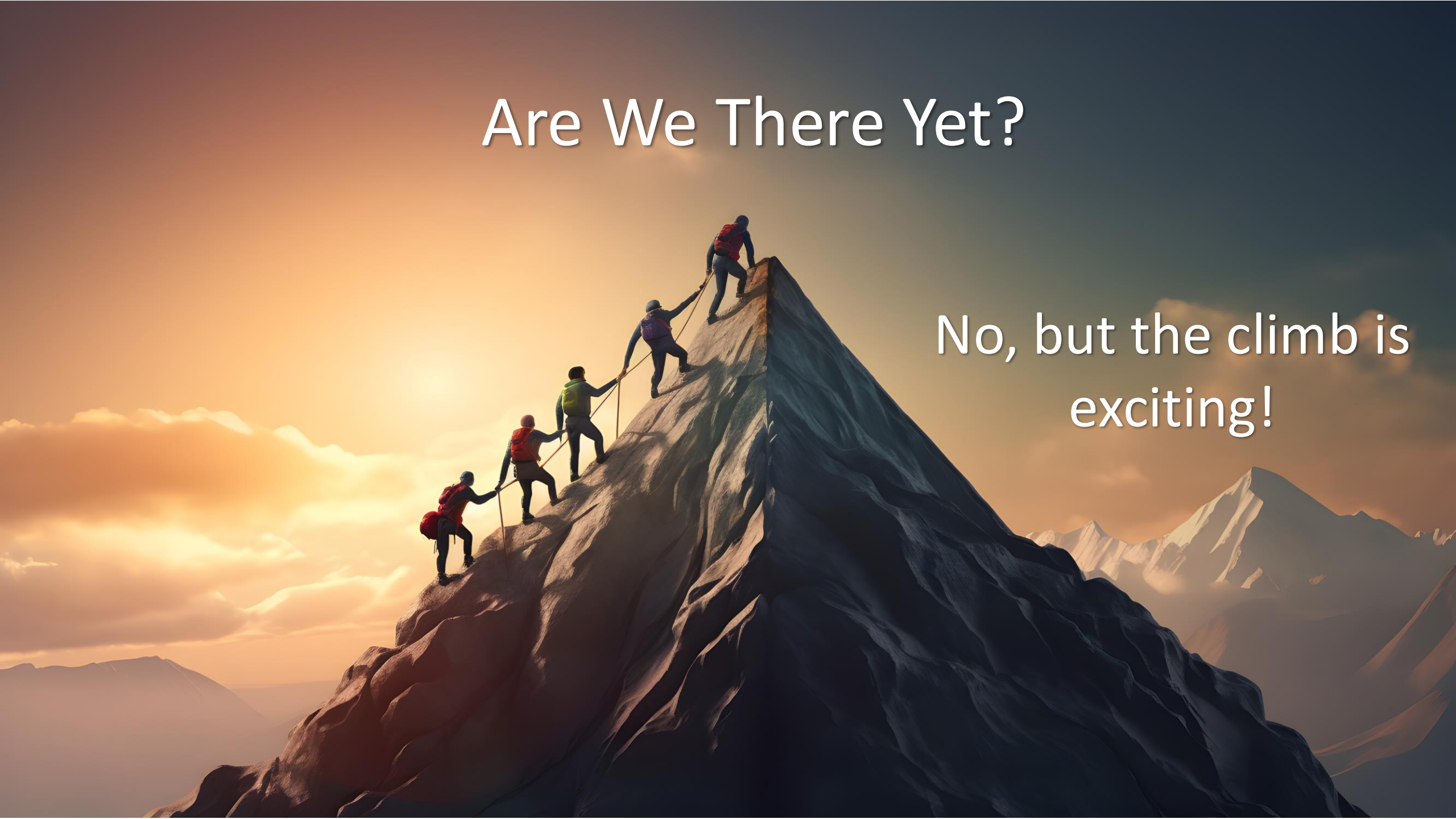
# Onsite Review





# Are We There Yet?

No, but the climb is  
exciting!





About Me...



**Shanja  
Gnanathurai**

QA System Analyst at Maple Lodge Farms



# How are we getting there?

Through  
developing our  
Master Inspection  
Schedule





**STANDARDIZATION OF TERMS**  
**THREE LEVELS OF ACTIVITY**

Identified daily/non-daily  
and weekly tasks

**MONITORING**

**INSPECTIONS**

Incorporated into the  
MASTER SCHEDULE

Completed by 2<sup>nd</sup> and 3<sup>rd</sup> parties

**AUDITS**



## Confirmation Email – Inspection Completed

### Example: Lab Services/Quality Performance

Hi Shanja,

Please see the below completed inspection schedule for the month of September.

LAB SERVICES	Responsible Person	September
Shelf-Life Testing	QA Manager	✓
QUALITY PERFORMANCE	Responsible Person	September
Evaluation of Customer Products (Costco & Loblaws)	QA Manager/Supervisor	✓
Inspections of Export Products	QA Supervisor	✓
Progress on Specification Management	QA Manager	✓
Review upward trends for complaints on Co-Man products	QA Manager	✓
Wiener Plant Rework Table	QA Supervisor	✓



**How successful has this  
approach been so far?**



- Executive oversight
- Continuous improvement focus
- Operations Impact



262



- Increased Accountability
- Audit Readiness
- Cultural shift toward continuous improvement





- Embrace challenges as opportunities
- Foster cross-departmental collaboration
- Prioritize accountability







**Thank you!**

**Questions?**



# Designing Environmental Monitoring programs



Track A

KIM ONETT

Senior Manager Canada Expert Partners, Merieux NutriSciences



# AI and Machine Learning in Food Safety



Track B

ASLI SOLMAZ-KAISER

CEO, iComplai







Track A

# Designing Environmental Monitoring programs

KIM ONETT

Senior Manager Canada Expert Partners, Merieux NutriSciences







# Designing Environmental Monitoring Programs

Kimberly Onett OFPA

September 30- October 1 2024





# The Mérieux Legacy

Marcel Mérieux, a pupil of Louis Pasteur and Emile Roux, established Institut Mérieux in 1897



**21,000+  
employees**



**5 industrial  
companies**



**3,7 billion €**



*A long term vision shared with long standing and stable shareholders"*



# FTC Consulting Business

Established in 2000 and acquired by Merieux NutriSciences in 2022

**Food Technology Consulting** strives to be widely recognized as the undisputed food safety leader in the food industry.

Our mission is to deliver the highest quality of service in the shortest period of time possible and to satisfy our clients with effective advertising and promotion of their businesses.



## TRANSFORMING SCIENTIFIC EXPERTISE INTO ACTION

Partner with our **food specialists** to **strengthen your value chain** and master your **food safety, quality, and sustainability** management systems.



### FOOD SAFETY & QUALITY MANAGEMENT

Identify and mitigate risks in your operations, supply chain, and business processes, get aligned with internationally recognized standards, and access the right expert to help you address and manage complex problems or crises with your food products.



### ENVIRONMENTAL FOOTPRINTING

Assess the environmental footprint of your products or company, and accelerate your contribution to the development of more sustainable food systems.



### PACKAGING

Define the best sustainable packaging strategy and assess the impact of food contact materials on your products.



### LABELING & REGULATORY

Ensure products meet the proper criteria for distribution in all your markets and that claims are scientifically substantiated.



### SENSORY & CONSUMER RESEARCH

Ensure that products meet the right sensory performance and match your target customers' expectations.



### TRAINING

Feed your teams with the latest knowledge on food safety, quality, & sustainability standards, and scientific advances.



### OUTSOURCED EXPERTS

Strengthen your team with a highly-skilled professional when you need it most.



# Recognized as a trusted and high quality business partner of the Food sector



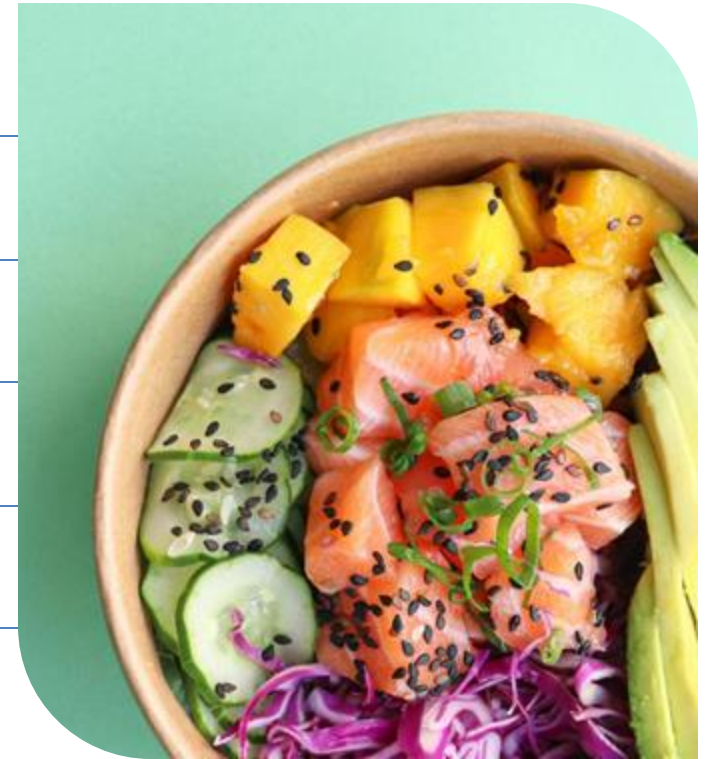
• QUALITY •

• GLOBAL NETWORK •

• CUSTOMIZED SERVICES •

• SCIENTIFIC EXPERTISE •

• CONFIDENCE •





# Overview – Critical Components

- Management Commitment and Responsibility
- Determination of Need
- Risk Evaluation
- Sampling Plan
- Root Cause and corrective action
- Data Management



# Boar's Head Meats LM outbreak

- Old meat residue from prior production runs
- Beaded condensation around door frame of ready to eat cooler
- Drain backed up in the production area
- Meat residue observed embedded in production lines
- Consistent reports and incidents of condensation being blown onto food contact surfaces without resolution.

**This is the largest  
listeriosis outbreak  
since the 2011 outbreak  
linked to cantaloupe.**

As of August 8, 2024 :

57 illnesses – all  
hospitalized

9 Deaths

18 States



## Environmental Monitoring

*The most common source of microbial contamination in a finished product is:*

***THE PROCESSING ENVIRONMENT***



# Defining the Problem. . . Statement of a Goal or Purpose

1. What are we trying to do?
  1. Comply with regulatory requirements
  2. Meet customer requirements
  3. Meet consumer expectations
  4. Management of Risk
  5. Produce safe and wholesome product

***Are we focusing on the right thing?***





# Comprehensive Risk Assessment





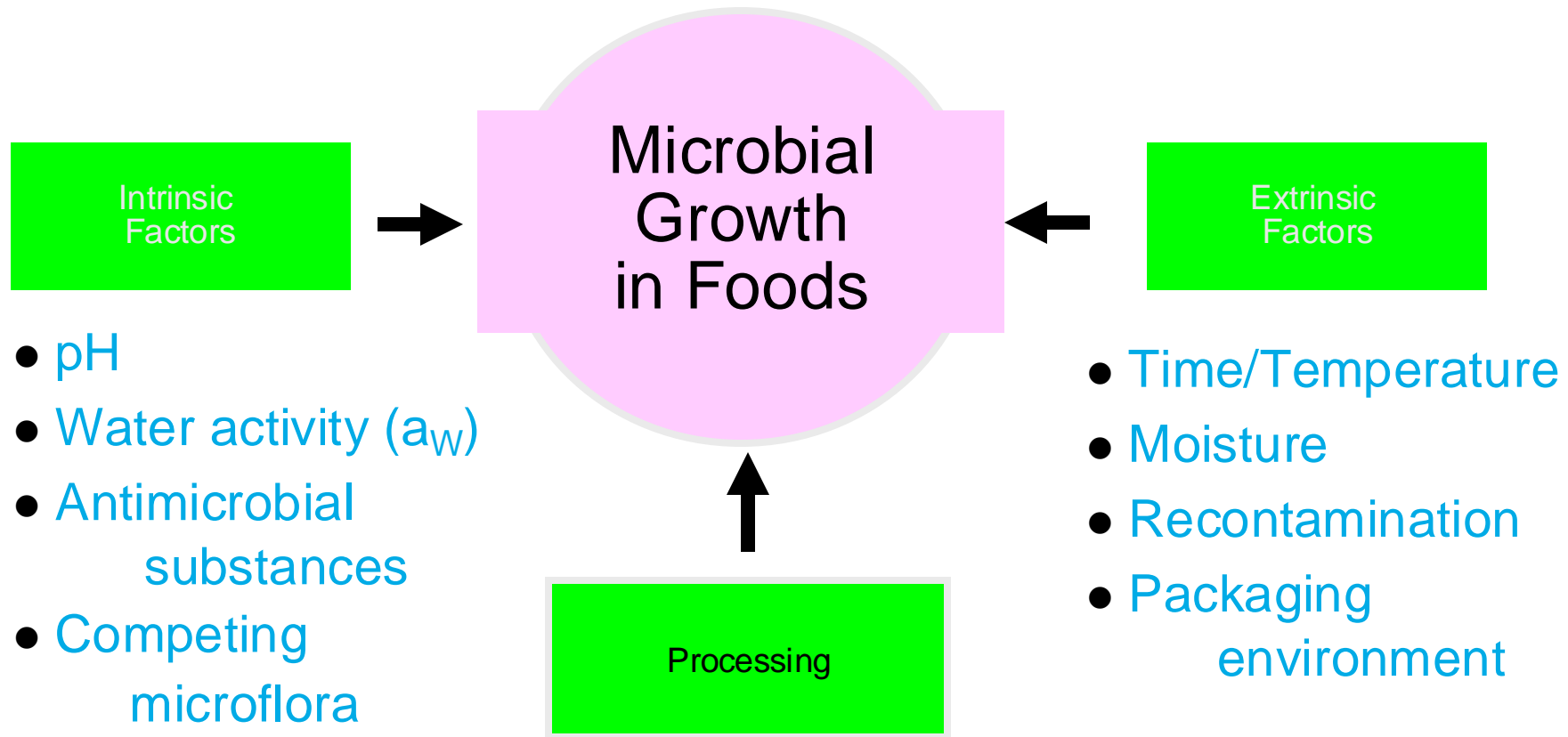
# Reasons for EMPs

1. Regulatory requirements
2. Risk management
3. Cleaning verification
4. Sanitation verification
5. Routine monitoring
6. Investigations
7. Customer requirements
8. Prevent transient contamination from becoming resident





# FACTORS AFFECTING MICROBIAL GROWTH





# Regulatory Requirements

- HACCP
- Preventive Controls
- FDA draft guidance for control of Lm
- Prerequisite programs & GMP Compliance (subpart B)
- SSOP validation
- Produce Safety Rule





# Management Commitment & Responsibility

- Regulatory and Legal Implications of Results
- Define Expectations
- Allocation of Resources/Budget Constraints
  - Employee training & time
  - Sampling & testing costs
  - Equipment & facility modifications
- Assignment of Program Responsibilities
  - Not always QA/QC
- Integration with Other Programs
- Product Disposition
  - Hold & release
  - Reject, destroy or reprocess impacted product





# Risk Assessment and Management

- Identify growth niches
- Assess sanitary design of facility and equipment
- Identify cross contamination sites
- Hygienic zoning evaluation
  - Ensure raw/cooked separation
  - Prove lot/line separation



# Risk Assessment and Management

- Evaluate traffic and people flow
- Verify personnel practices
- Equipment maintenance and repair
  - Routine practices
  - Special requirements
- Alert mechanism for out of control processes



# Basics

- An effective environmental monitoring program (EMP) includes:
  - a basic understanding of microorganisms
  - the purpose of the sampling
  - understanding how the data will be used
  - fits the individual needs of the company
  - utilizes judgment
  
- It is a prevention oriented and a critical piece of the overall food safety program



At its most basic level, with an EMP we are trying to prevent. . .

Transient contamination from becoming resident



# Terms Describing Cell Populations

## Transient

- Non-adherent (yet)
- Not increasing in numbers
- Easily eliminated with validated cleaning and sanitation practices

## Resident

- may be adherent
- surviving and possibly increasing in numbers
- ongoing presence likely due to niches in the environment
- niches protect from cleaning and sanitation efforts

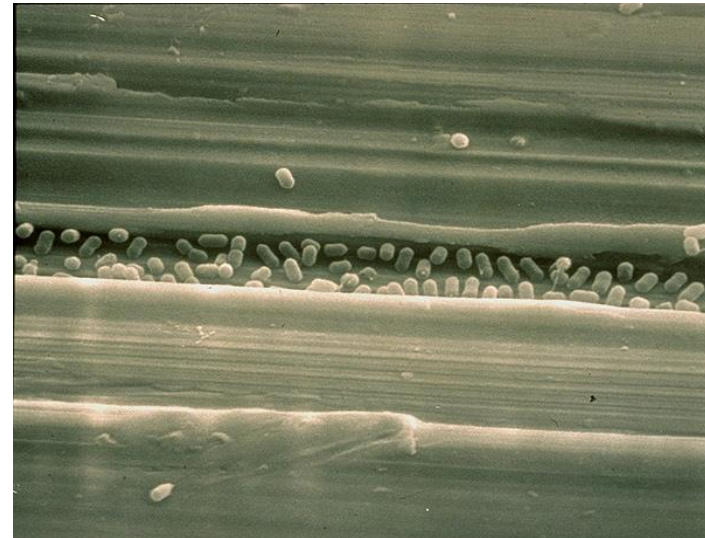
## Persistent

- term used by regulatory agencies
- carries connotation that root cause analysis and/or corrective actions failed
- may be sporadic or unrelated causes
  - ingredients
  - external traffic
  - external transport
  - outside contractors
- hard to establish without strain characterization



# Growth Niches

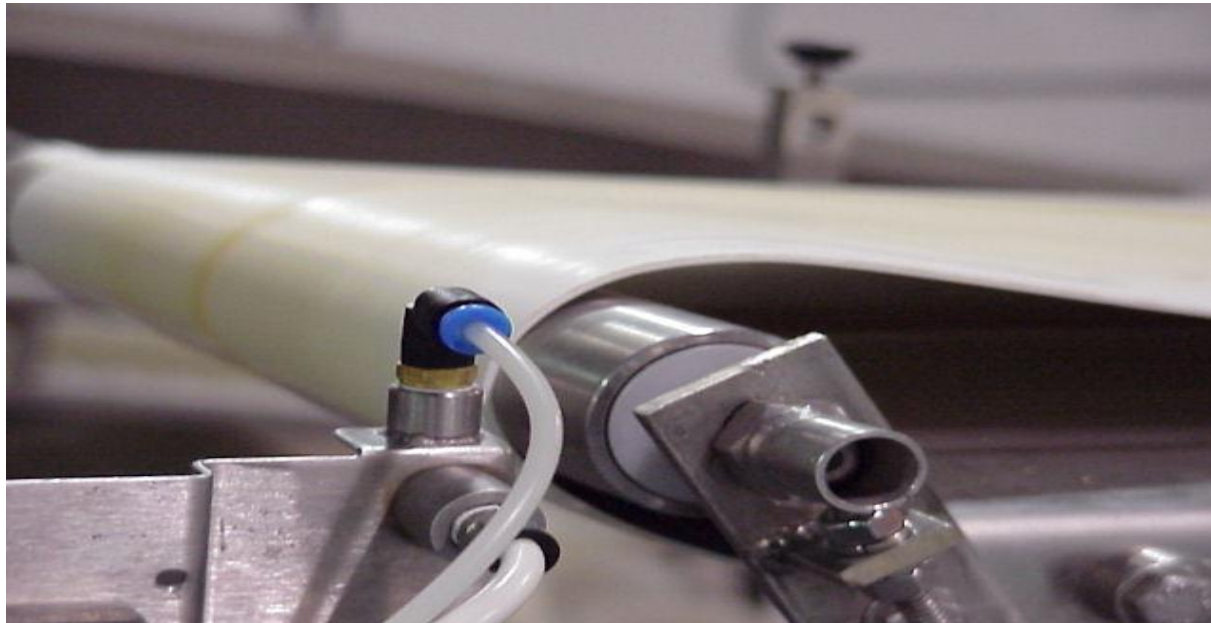
- Microbial growth niches, a.k.a harborage site
  - Locations within the facility or on equipment that allow ongoing propagation of microorganisms
  - Supports dispersion of the microbial population into the environment or on equipment





# Significance of a Niche

- Greatest importance after a kill step
- Appears visually clean and acceptable
- Microbiological testing necessary to identify





# Microbial Growth Niches

- Growth niches may arise from:
  - Inadequate cleaning practices
  - Insufficient sanitizer coverage or concentration
  - Inadequate disassembly or reassembly of equipment
  - Equipment design

*If you can't see it or reach it, you can't clean it or sample it!*



# Equipment Defects That Can Lead to Formation of Growth Niches

- Improper, broken or spot welds
- Metal-to-metal surfaces bolted together
- Unsealed hollow tube
- Drilled or improperly installed stainless steel cladding
- Worn conveyor belting
- Improperly installed gaskets or rubber seals
- Worn hydraulic seals
- Tape (adhesive, duct, etc.)





# Hygienic Design of Equipment and Facility

Roof leak





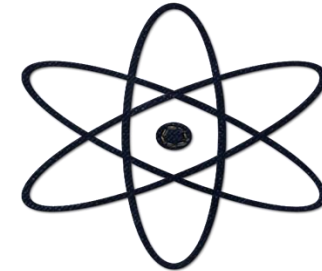
# Unlikely locations and Niches

- Listeria Inside Hobart deli slicer handles
- Salmonella in air lines that operate pneumatic gates
- Listeria embedded in beverage fillers that was found by collecting drip underneath the equipment
- Listeria in floor cracks inside spiral freezers
- Listeria in condensate inside exhaust hoods



# Biofilms

- Microbial biofilms
  - Bacteria attach to a solid surface and produce extracellular polymeric substances during growth phase that enclose and anchor the bacteria to those surfaces
  - The extracellular materials protect the bacteria from general cleaning and sanitizing efforts
  - Biofilms are very difficult to remove once formed
  - Biofilms are considered a microbial growth niche
  - Removal attained with harsh chemical treatments





# Risk Evaluation

- Properties of the product
  - Intrinsic and extrinsic properties
  - History
- Where do pathogen reduction steps occur?
- How complex is the production operation?
- How often does sanitation occur?
- Expert input
- Not only whether or not to have EMP, but how stringent
  - How many samples taken at each sampling time?
  - How often to sample?





# Zone Concept

- Categorize the production environment into zones
  - Designation based on risk to product
  - Very dependent on equipment and process
  - Not uncommon to have differences in opinion on designation

***It is more important to make decisions based on risk to the product than belabor fine points of designation.***



# Zone Concept

**Zone 1** – product contact surfaces

**Zone 2** – area immediately adjacent to contact surfaces capable of contaminating product contact surfaces

**Zone 3** – areas surrounding zone 2 capable of introducing contaminants into zone 2 by actions of humans or movement of equipment

- the remainder of the exposed product production
- area

**Zone 4** – areas outside zone 3 and generally considered remote relative to product



# Sampling Plan for Indicators and Pathogens

- Each facility needs its own science based sampling plan
- Plan is typically described in the EMP SOP
- Sampling plan includes:
  - Sampling sites – zone and precise description of location
  - Number of samples total and at each sampling event
  - Frequency of sampling
  - When to sample
  - Target analyte(s)
  - Who conducts the sampling
  - Sampling methods



# Selection of Sampling Sites

- What is the purpose of the sampling
  - Sanitation verification
  - Routine monitoring
  - Investigational
- Think like the enemy – consider the principles discussed related to microbial growth and survival
- Where does the environment pose the greater risk to product
- What features of the equipment, process or facility allow niche development



# Selection of Sampling Sites (cont'd)

- Where are cleaning and sanitation efforts potentially compromised
- What practices increase risk
  - Creation of growth niches
  - Cross contamination
  - Transfer of microorganisms into high care area
- Take into account the zone concept and designation of sampling locations relative to the zone
- List is intended to be dynamic and reviewed periodically
  - Let the data tell the story



## Sampling Frequency

*Sampling frequency of sites should be based on the results of appropriately designed and executed micro surveys of the process and sanitation effectiveness.*



# Sampling Frequency

- Sampling on a weekly basis is common
- Rotation of sites
  - Common industry practice
  - Identify list of sites and complete list within a period of time
  - Random selection of sites and sampling times
- Do not fixate on designated list of sites
  - Allow for additional sites based on facility events and personnel observations
- Adverse events should always result in adjustment of frequency until resolution



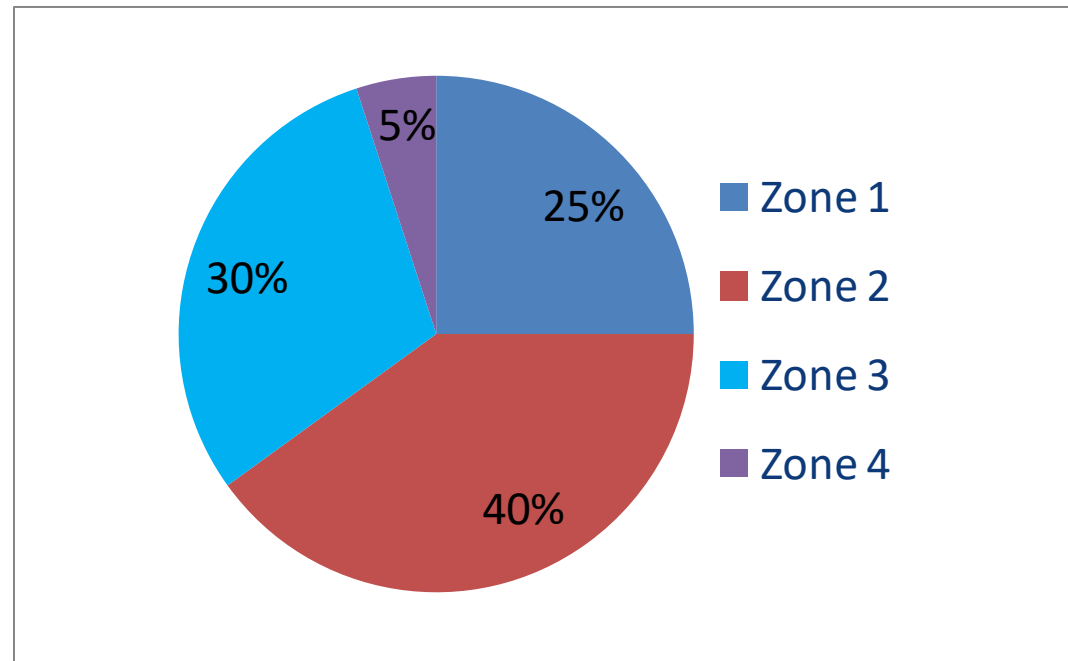
# Frequency Examples

- Risk assessment/baseline development
  - 1 – 2 months
  - 2 – 3 data points per site
  - 20 –30 swabs per week
- Sanitation verification of a validated process
  - Every production run of each set of sites for 5 – 10 production runs
  - Weekly per line if process is in control
- Routine monitoring
  - 15 – 100 per month on a weekly schedule

GMA 2009 “Control of *Salmonella* in Low Moisture Foods”



## Example of Sample Ratios per Zone





# Initial Response to a Positive Finding

- Course of Action first presumptive or confirmed positive
  - Is product affected by the test result? If so, retain affected product.
  - Isolate the site
  - Initiate cleaning and sanitation procedures (determining if contamination incident was transient).
  - Re-sample at the same time of sampling as the initial sample was taken. (Repeat the same conditions as much as possible)
  - Prepare to initiate and conduct vectoring sampling
    - The original positive site is often a symptom and not the disease



# Process and Facility Mapping

- Maps
  - Map positives within zones
  - Overlay positives with key facility features
    - Over all floor plan
    - Thresholds
    - Drains
    - Water sources, including condensation
    - Specific equipment
    - Repairs, leaks or other temporary issues
    - Ventilation outlets





# Investigational Elements

Two key questions need to be answered:

- ✓ *HOW DID THE CONTAMINATE GET INTO THE PROCESS STREAM?*
- ✓ *IS IT A TRANSIENT OR RESIDENT ORGANISM?*



# Elements of Investigation

- Disposition of affected or non-conforming product
- Review of Sanitation Standard Operating Procedure
- Plan for re-sampling and re-testing including when to sample and test
- Root Cause Analysis
- Short-term (temporary) and Long-term (permanent) actions to address cause of contamination
- Ongoing verification
- Recordkeeping



# Suggested Vectoring Protocol

- Locations determined by investigational team
  - typically a minimum of 5 sites
  - typically within a 5 – 20 foot radius of the original positive
- Second set of vector samples taken
  - post receipt of results from 1<sup>st</sup> vectoring
  - selection of sites at discretion of team and based on results of 1<sup>st</sup> vectoring
- Third set of vector samples taken under same parameters as second
- Any positive finding results in restarting vectoring protocol based on that location
- All noncompliant sites must demonstrate at least 3 consecutive sets of compliant results through vectoring before the site is rotated out for routine monitoring



# Sampling and Monitoring Points

- Prepare appropriate staff for extensive disruption and breakdown of equipment
  - Seek & Destroy
- Do not limit the environmental monitoring to just swabs and sponges
  - Residue
  - Air sampling – general and compressed systems
  - Central and portable vacuum systems
- Do not limit swabbing to specific units of measure, i.e. 100 cm<sup>2</sup>
- Anything is up for grabs



# Root Cause Considerations

- Operation
- Personnel
- Process
- Source of materials
- Equipment
- Sanitation
- Capacity
- Construction
- Location or surrounding area

CHANGES IN SOME PROCEDURE OR PROCESS  
USUALLY PRECEDES AN EVENT





# Investigational Tools/Activities

- Interviews with personnel; Questions include:
  - sanitation activity
  - operations (people, products, and equipment movement)
  - equipment repair
- Review employee training
- Inspect current and historic EMP data
- Review sanitation records
- Review recent repairs and construction
- Determine if any equipment has been modified or changed
- Mapping
- Utilization of outside consultants
- Increase sampling sites and frequency



# Why Root Cause Analysis

- Used for routine monitoring and investigational incidents
- Regulatory folks have access to EMP records
- If Root Cause is NOT Found - Likely Results in:
  - Repeated Issues – interpretation of persistent microorganisms
  - Fixing Symptoms Only
  - Loss of Resources
  - Wasted Time
- Problems often Masked
- Be Focused and Open Minded
- Be Patient
- Relentless





# Common Points of Failure

Corrective actions delayed or not taken

Policies on response to positives not robust

Data review not conducted timely or regularly

Team responsibilities not clearly defined

Critical or at risk locations not sampled

Proper sampling techniques not followed

Data analysis and interpretation not sufficient



# Summary

- There is no one size fits all program
- Each program is unique based on the outcome of thorough risk assessment
- If the goal is solely regulatory compliance the program will not be effective
- Sample based on risk and be aggressive when necessary
- Respond to the data - map results against facility layout
- Identify routes of entry and employ intervention programs to control contamination spread
- Team approach for investigations and root cause analysis





**Thank you**



# Last Call - Raffle

**Cash Only**

**\$10 – 2 tickets**

**\$20 – 5 tickets**



**Network Name:** Bellvue Manor Guest  
**Password:** grandsalon



## Last Chance - Passport

1. Visit our Sponsors
2. Obtain a Stamp
3. Add your name and place your passport in the box close to the stage.

Runner Up: IAFP Membership  
Grand Prize: Registration to OFPA's 2025 Meeting



Network Name: Bellvue Manor Guest  
Password: grandsalon





# Lunch, Networking & Exhibits

12:35 pm – 1:35 pm





# Door Prizes



Network Name: Bellvue Manor Guest  
Password: grandsalon



# OFPA AWARDS

Recognize outstanding achievements and contributions by industry peers to food safety.

Award of Merit



Lifetime  
Achievement Award



Sanitarian of the  
Year







## **Platinum Sponsor Presentation**







## PROFESSIONAL SANITATION SERVICES

COO Mario Palacios



# STRATEGIC RESPONSE

## Shortage of Skilled Workers

- Shortages in the employment market made supporting our clients a challenge
- Our Foreign Worker provides an opportunity to provide consistent and competent workforce





# LABOR MARKET IMPACT ASSESSMENT (LMIA) PROGRAM

## **LMIA WAS APPROVED BY THE GOVERNMENT OF CANADA THROUGH EMPLOYMENT AND SOCIAL DEVELOPMENT CANADA (ESDC)/SERVICE CANADA (SC)**

- Allows Canadian companies to hire foreign workers to cover labor demands
- LIMA approves TBM's first application in August 2021 for 50 Light Duty Cleaners
- TBM works closely with the local government to ensure transparency and fair working conditions
- December 2021 the first group of Temporary Foreign workers arrive in Canada

TBM targets the poorest areas to provide opportunities to improve the lives of our workers and their families. This program provides at not cost:

- 2-year employment contract
- Health examination
- Passport application
- Round trip flights
- 2 weeks vacation to return home
- Housing
- Transportation to and from work
- Benefits



# FOREIGN WORKER PROGRAM

*Greeting new workers upon arrival at  
Toronto International Airport*





# EL SALVADOR





# COSTA RICA





MEXICO







# KARLA'S STORY

*Karla Stefany Alfaro de Chavez, from Mejicanos, San Salvador came to Canada December 2021*

*"For me it has been a new experience to come to work here with new challenges and goals, learning a new language and customs here, meet people with different nationalities Philippines, French, and Canadians, very friendly people who try to understand our language as well.*

*It has been (somewhat) difficult for me to adapt, since I left my home with my small children of 9 and 3 years old and my husband to be able to get ahead financially. Thinking about them is my motivation to move forward and achieve our goals, the ones we set ourselves when I arrived here this year, we have managed to get ahead of all the debts we had at home, plus help for my mother and my in-laws. By having a good money management, a lot can be done, this year I finished it successfully, since I paid my biggest debt and the following year is already a profit to modify the home, buy a car and save for a business in the future.*

*I am very grateful for having the opportunity to work with TMB, since I have managed to get ahead with my family in El Salvador. Thank you very much for everything you have given me during my time here. It is a company that takes great care of its employees and looks after the well-being of each one, I thank you again. Blessings".*



MY CHILDREN DANIEL (9 YEARS OLD) & CARLOS (3 YEARS OLD) WITH MY HUSBAND



THIS IS MY MOM (Thanks to my job, she fixed her teeth)



With my job I can also help my in-laws



THIS IS MY TINY HOUSE IN SAN SALVADOR (JUST ONE ROOM)



BY TAKING CARE OF OUR PEOPLE,  
WE CAN TAKE BETTER CARE OF YOU.



# THANK YOU

COO

Mario Palacios

[mpalacios@tbmservicegroup.com](mailto:mpalacios@tbmservicegroup.com)

[www.tbmservicegroup.com](http://www.tbmservicegroup.com)





# Food Fraud Prevention and Emerging Risks and Hazards

DELEO DE LEONARDIS

CEO and Co-Founder at Purity IQ Inc.







Your leader in  
**SCIENCE**  
Your partner in  
**TRUST**



# THE ESSENTIAL ROLE OF ANALYTICAL TESTING IN **ADULTERATION PREVENTION**

Deleo de Leonardis  
September 2024



- Our food and supplement industries face more potential for **ADULTERATION** than ever before.
- Commonly used risk mitigation strategies have **VULNERABILITIES**.
- How can companies assure themselves and their customers that **PRODUCTS AND INGREDIENTS ARE AUTHENTIC?**

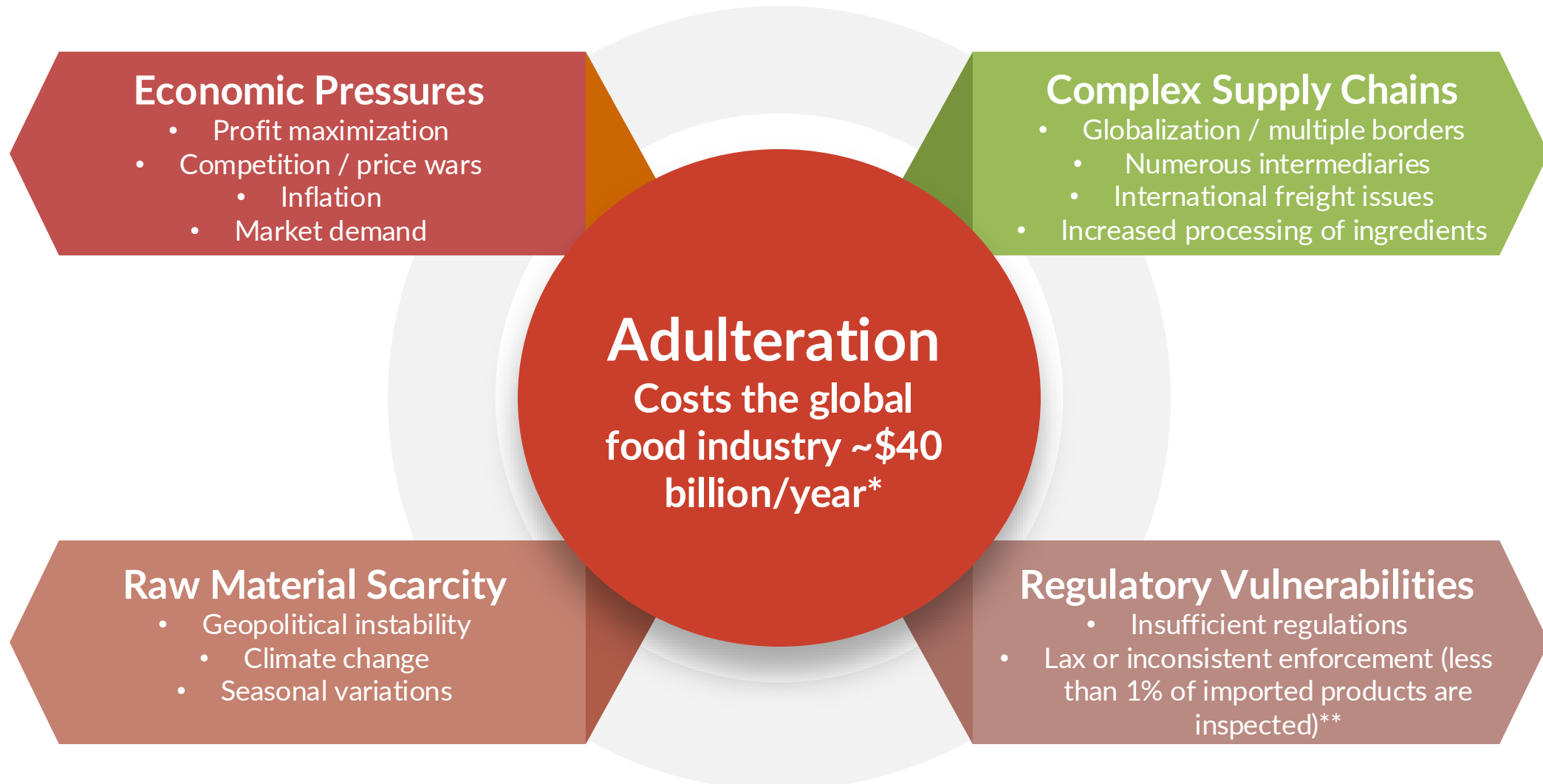


- **Our food and supplement industries face more potential for **ADULTERATION** than ever before.**
- Commonly used risk mitigation strategies have **VULNERABILITIES.**
- How can companies assure themselves and their customers that **PRODUCTS AND INGREDIENTS ARE AUTHENTIC?**



# ADULTERATION IS **ON THE RISE**

Exacerbated by the pandemic, supply challenges are not going away anytime soon



Sources: \*U.S. Food & Drug Administration (<https://www.fda.gov/food/compliance-enforcement-food/economically-motivated-adulteration-food-fraud>)




\*\* GAO U.S. Government Accountability Office (<https://www.gao.gov/products/gao-16-399>)



- Our food and supplement industries face more potential for **ADULTERATION** than ever before.
- **Commonly used risk mitigation strategies have VULNERABILITIES.**
- How can companies assure themselves and their customers that **PRODUCTS AND INGREDIENTS ARE AUTHENTIC?**






# MITIGATION STRATEGIES CAN BE VULNERABLE

Mitigation Strategy	Role	Vulnerability
 <b>Risk Assessments</b>	Identifying supply chain vulnerabilities for focused monitoring.	Focused on known risks and might not adapt quickly to new and fraudulent practices.
 <b>Product Specifications</b>	Defining clear standards for ingredients and ensuring consistency across batches.	Specifications are difficult to enforce - especially complex compositions or blends.
 <b>Supplier Relationships</b>	Building trust and transparency with new and existing suppliers.	Long standing relationships may lead to complacency. Trusted suppliers may be dependent on other ingredient suppliers.



# MITIGATION STRATEGIES CAN BE VULNERABLE

Mitigation Strategy	Role	Vulnerability
 <b>Document Control</b>	Managing records to ensure compliance (e.g., COAs).	Can be manipulated i.e., falsified or forged
 <b>Supplier Audits</b>	Conducting regular evaluation of supplier practices.	Mostly site-related - not product specific. They are periodic in nature and often scheduled.
 <b>Supply Chain Transparency</b>	Using technology (e.g., blockchain) to monitor and track products.	Relies on integrity of inputted data which can be manipulated or inaccurate.



# ROLE OF ANALYTICAL TESTING

## → **Scientific Proof**

→ Objective, unbiased, scientific evidence

## → **Early Detection & Prevention**

→ Detect fraudulent activities early and prevent them from escalating

→ Identify new and emerging fraud risks

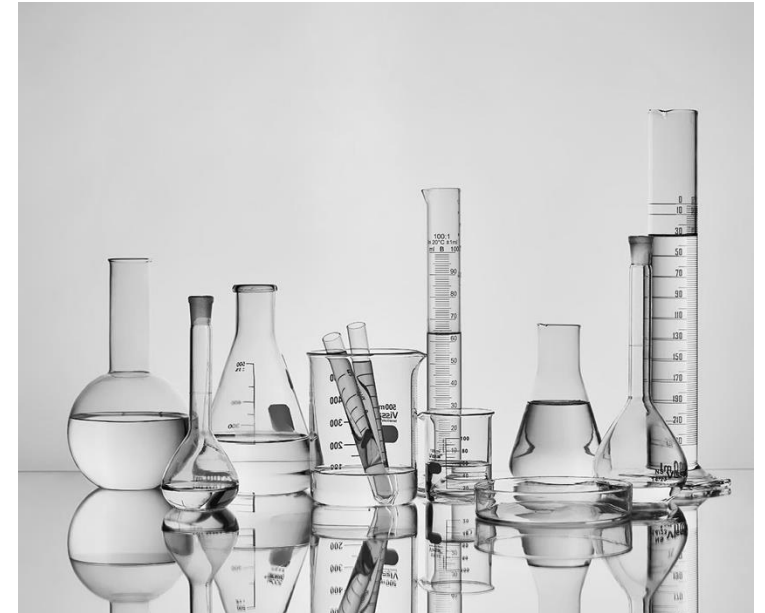
## → **Strong Deterrent**

→ Rigorous testing regime discourages potential fraudsters

## → **Builds Consumer Trust**

→ Consumers trust food products that have been verified by third-party testing

→ Regular testing can be communicated to consumers, enhancing transparency and trust





# TESTING METHODS VARY IN EFFECTIVENESS

## → **Fit-for-Purpose Methods**

- Not all analytical methods are designed with authenticity testing in mind
- Some methods may excel in other areas (e.g., safety, quality) but fall short when detecting adulteration
  - Identity testing vs. Authenticity testing

## → **Gaps in Traditional Testing**

- Fraudsters are exploiting shortcomings in the most commonly used analytical methods



# SELECTING THE APPROPRIATE TESTING METHODS

- A comprehensive testing strategy should include methods **specifically designed** to detect authenticity issues
- Factors to consider:
  - Complexity of food matrices
  - Qualitative vs. Quantitative
  - Targeted vs. Non-Targeted





# CASE EXAMPLE

## BOTANICAL SUPPLEMENTS

→ Ginseng (Panax ginseng):

- **Intended Part:** The root of the Ginseng plant, known for its therapeutic benefits due to the presence of specific ginsenosides, is the preferred ingredient in supplements.
- **Adulteration:** Fraudsters might use cheaper plant parts, such as stems or leaves, instead of the root. These parts have lower concentrations of the beneficial ginsenosides but might still pass some basic testing.
- **Detection Challenge:** When an analytical method focuses solely on identifying general chemical markers, like total ginsenoside content, it might fail to differentiate between the ginsenosides specific to the root and those found in other parts of the plant. As a result, the substitution could remain undetected, misleading consumers regarding the product's quality and effectiveness.





# QUESTIONS FOR YOUR LABS

- What analytical methods do they offer for food fraud detection?
  - Do they use both targeted and non-targeted testing methods?
- Are their analytical methods quantitative?
  - If qualitative, do they convert results into quantitative data?
- What kind of reports and documentation do they provide?
  - Are they clear and detailed?
- What is the turnaround time for their testing services?
  - Timeliness can be critical, especially for perishable products or urgent fraud investigations.
- What kind of further follow-up do they offer?
  - If a result is positive for food fraud or even, is inconclusive, will they do a deeper dive or an investigation to determine the root cause of the non-conformance?



# ADDRESSING AND RESOLVING AUTHENTICITY ISSUES

## → **Deeper Investigation**

- Utilize the expertise of a lab specializing in authenticity testing to trace the issue back to its origin within the supply chain

## → **Identify the Root Cause of the Non-Conformance**

- Will not only resolve the immediate issue but also strengthen your overall food fraud prevention strategy by closing potential gaps

## → **Implement Corrective Actions**

- Prevent future occurrences, enhancing the integrity of your supply chain

## → **Maintain Compliance**

- Safeguard your brand and consumer trust



- Our food and supplement industries face more potential for **ADULTERATION** than ever before.
- Commonly used risk mitigation strategies have **VULNERABILITIES**.
- **How can companies assure themselves and their customers that **PRODUCTS AND INGREDIENTS ARE AUTHENTIC?****



# WHY 3<sup>RD</sup> PARTY CERTIFICATION MATTERS

- Ensures adherence to **quality standards**
- Provides **ongoing monitoring** and compliance
- **Mitigates risk** by ensuring that products are authentic thereby reducing the likelihood of product recalls and reputational damage
- Third party provides an **impartial validation**
- **Differentiates** products in the marketplace
- Builds consumer trust
  - **Enhances brand reputation** by demonstrating a commitment to transparency

Over 90% of consumers don't trust labels alone and say 3<sup>rd</sup> party verification impacts their buying decisions



# IN SUMMARY

- Although commonly used mitigation strategies are essential components of a food fraud prevention program, **analytical testing is irreplaceable** due to its ability to provide direct, scientific verification of product authenticity.
- While some methods are effective for identity testing, they may not be applicable or sensitive enough for **authenticity testing**.
- Evaluate the capabilities and reliability of your analytical testing labs
  - Are they using methods that are **quantitative and non-targeted**?
  - Do they offer **follow-up** services to address a non-conformance?
- Consider third-party certification
  - Serves as a powerful tool to build **consumer trust, differentiate products**, and demonstrate a **commitment to quality** and safety.



THANK YOU





Your leader in  
**SCIENCE**  
Your partner in  
**TRUST**





# Door Prizes



# The Maple Leaf Foods, Food Safety Journey

**SPIR MARINAKIS**

VP of Food Safety, Quality, Technical Services and Sanitation, Maple  
Leaf Foods Inc.







## 2024 Event Survey

**QR code on each table**







# Raffle Draw





# Passport Runner Up





# Passport Grand Prize



# SAVE THE DATE - 2025



**Food Safety Symposium, Annual General Meeting (AGM),  
Clive Kingsbury Competition and Social Mixer**

**September 30<sup>th</sup> – October 1<sup>st</sup>, 2025.**





# Thank you to our sponsors !

## Elite



## Platinum



## Diamond



## Gold



## Silver



## Micro





# Thank you to our exhibitors!





# *Student Volunteers!*



**ISHA CHAVAN**



**SAHIB REEN**



**HARNISHA PATEL**



**SONAL SAINI**



**RANU SUBEDI**



**JEMIL KAPADIA**



# 2024 BOARD OF DIRECTORS



Jessica Burke  
*President*



Marin Pavlic  
*Vice-President*



Arlene Larson  
*Treasurer*



Ellen Gravi  
*Director*



Brett Dooley  
*Director*



Birendra Rajapreya  
*Director*



Kajam (KJ) Kunarajasingam  
*Director*



Sonny Brar  
*Director*



Hanna Sharafi  
*Director*



Irem Aydogdu  
*Director*



Darshan Gautre  
*Director*



Shrikant Indulkar  
*Director*



Dharamdeo Singh  
*Student Director*





**Thank You**  
For Coming

