



Current Perspective on Listeria Control

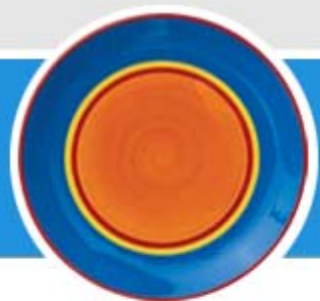
Randall Huffman, Ph.D.
Chief Food Safety Officer
Maple Leaf Foods

Canadian Meat Council, Annual
Conference
May 7, 2009



Outline

- **Perspectives – “Lessons Learned” from the 2008 Listeriosis outbreak**
- **Going Forward - Focus on Listeria Management and Control in RTE**
- **CFIA policy, industry progress and the future**



Perspectives

Listeria control in RTE is critical to public health

Listeria control is not easy

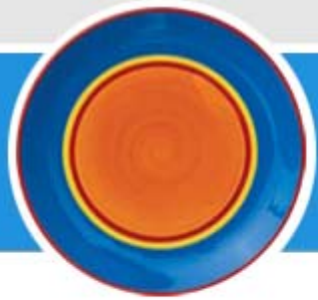
Listeria control in RTE is the “new normal”

Strong, and consistent regulatory oversight is crucial

Listeria control is about ...Details, Details, Details

Listeria control is not easy

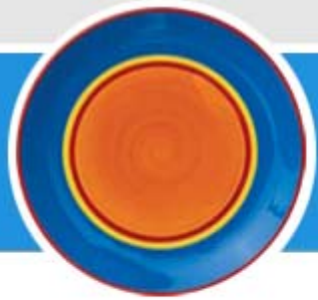




Bartor Road Product Recall

- **In August 2008 Maple Leaf initiated the largest recall in the Company's history**
 - ▶ Three SKU's of deli products manufactured at our Bartor Road facility were found contaminated with *Listeria monocytogenes* and linked to illness and death
 - 22 deaths; 56 total cases confirmed
 - ▶ Total three recalls:
 - August 17: First recall initiated immediately upon learning of positive test results for *Listeria monocytogenes* in two products
 - August 20: Expanded recall initiated following positive test of a third product
 - August 23: Expanded recall to include all production from the two affected lines when product linked to outbreak strain (191 products)
 - ▶ Some products were distributed to health care facilities, where some people have a higher risk for contracting listeriosis
 - ▶ This involved a large recall of 191 products, even though only a small number were affected





Maple Leaf Response to Crisis

As manufacturers we must demonstrate the highest level of responsibility & accountability possible

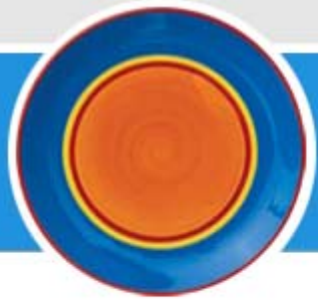
Take accountability

Put public health and consumer interests first

Lead in open and fact based communication

Implement decisive action plan





Take Accountability, Put Consumer First

- **The ultimate test of Corporate Values:**
 - ▶ “Do what’s right”
 - ▶ “Dare to be transparent”
- **Immediate public apology by CEO and commitment to fix the problem**
- **Put consumer interests ahead of financial and legal interests**

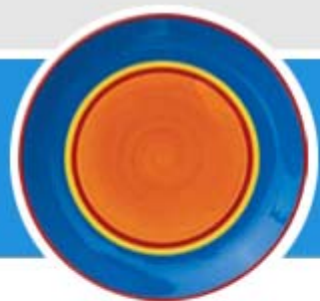




Enhanced Food Safety Protocols

- **Strengthened approach to environment, equipment and product sampling testing and data analysis to find any potential contamination sooner**
 - ▶ **Doubled the number of testing sites and frequency of sampling on every line across our 24 RTE plants**
 - ▶ **Sampling results reviewed individually and collectively to assess potential patterns**
- **Documented new protocols into new Standard Operating Procedures, obtained CFIA approval, and rolled them out across all RTE plants including training of our**

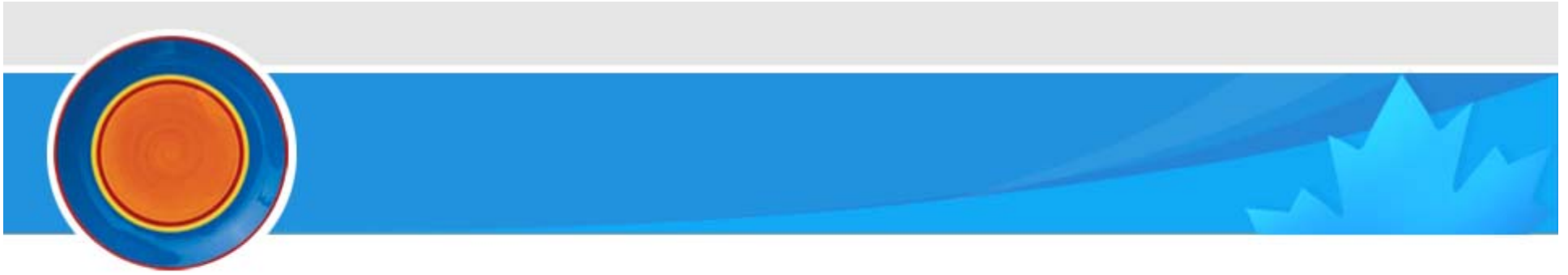




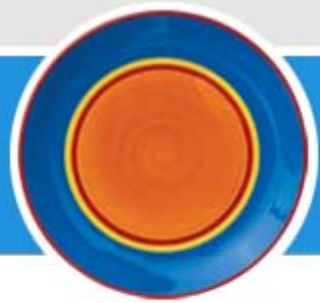
Enhanced *Listeria* Testing

- **Nearly 1,500 environmental tests weekly across 24 RTE plants comprised of 119 production lines**
 - ▶ **Approximately 75,000 routine test samples taken annually**
 - ▶ **Positive incident rate of less than 1%, well within U.S. FSIS reported data**
 - ▶ **Additional targeted sampling allows for in-depth line analysis and research to eliminate harbourage points**
- **Random product testing on each line monthly**
 - ▶ **Approximately 1,300 routine product samples annually, excluding additional targeting sample as part of 'hold and release'**
- **Daily senior management call to review testing results**





Listeria Control Background

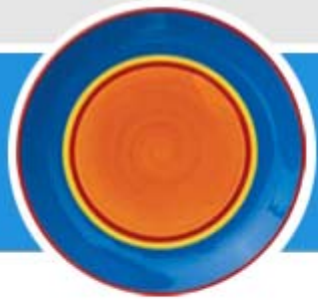


Three General Scenarios of Foodborne Listeriosis

- 1. Isolated case**
- 2. Cases due to a single event or lot of food**
- 3. Clusters and isolated cases scattered by time and location.**

Source: Tompkin, R.B. (2002) J. Food Prot. 65:709-725



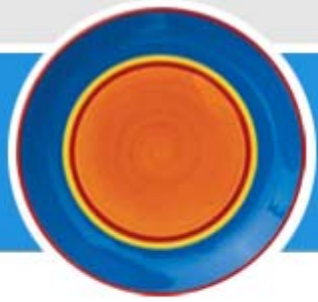


Scenario No. 1: The Isolated Case

- **An individual case of listeriosis with no apparent link to others.**
- **The conditions leading to isolated cases are varied and often uncertain or unknown.**
- **Some may be part of a cluster or outbreak that was not detected.**

Source: Tompkin, R.B. (2002) J. Food Prot. 65:709-725



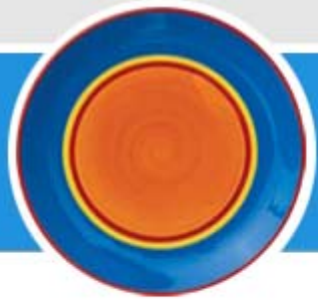


Scenario No. 2: Cases Linked by a Single Lot of Food

- **One lot of contaminated food that leads to a cluster of cases.**
- **One or more food handling errors may be involved.**
- **The outbreak ceases when the lot of food is no longer available.**

Source: Tompkin, R.B. (2002) J. Food Prot. 65:709-725



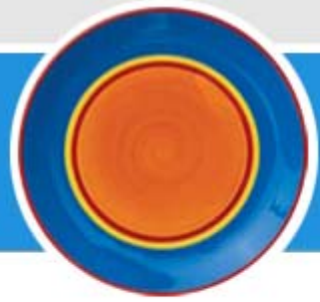


Scenario 3: Clusters or outbreaks involving multiple lots of food from a single source

- **The cases may be scattered by time and location.**
- **An unusually virulent strain of *Lm* has become established in a food operation.**
- **Multiple lots of food are contaminated over time.**
- **The food supports the growth of *Lm*.**

Source: Tompkin, R.B. (2002) J. Food Prot. 65:709-725

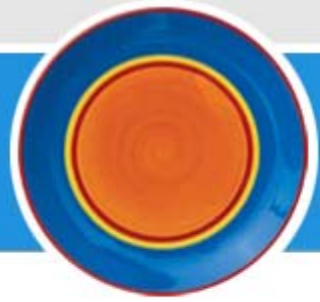




Industry Priorities

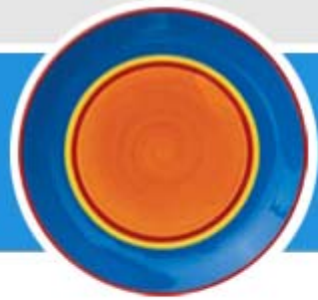
- 1. Prevent conditions that lead to extended outbreaks (scenario 3).**
- 2. Control conditions to minimize the risk of isolated cases and clusters (scenarios 1 and 2).**
- 3. Control conditions to satisfy regulatory requirements.**





Listeria Control & Management

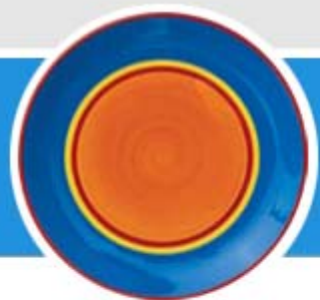
- The keys to *Listeria* control in the food processing plant:
 - ▶ Aggressive environmental testing for *Listeria* – **FIND IT!**
 - ▶ Aggressive corrective actions when positives detected – **FIX IT!!**



Foundations for Effective *Listeria* Management

- Sanitation program that prevents listeria harborage in the processing plant
- Aggressive environmental sampling plan that is designed to constantly seek out *Listeria* spp. harborage points and management commitment to celebrate finding positive samples
- Aggressive seek and destroy process that is triggered when positive samples are found
- Ongoing re-design of facilities and equipment to improve sanitary design and ease of cleaning
- Implementation of effective interventions in the process and in the products
- Ongoing analysis and reporting of data and evaluation of effectiveness of remedial actions





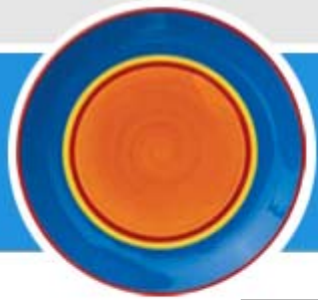
MLF Environmental Testing

- FCS and non-FCS testing
 - ▶ Ten (10) Level 1, Three (3) Level 2, Two (2) Level 3, and Two (2) Level 4 swabs from every line, every plant, every week
 - ▶ Sample sites are varied by week
 - ▶ Day of the week sampling varies

Levels:

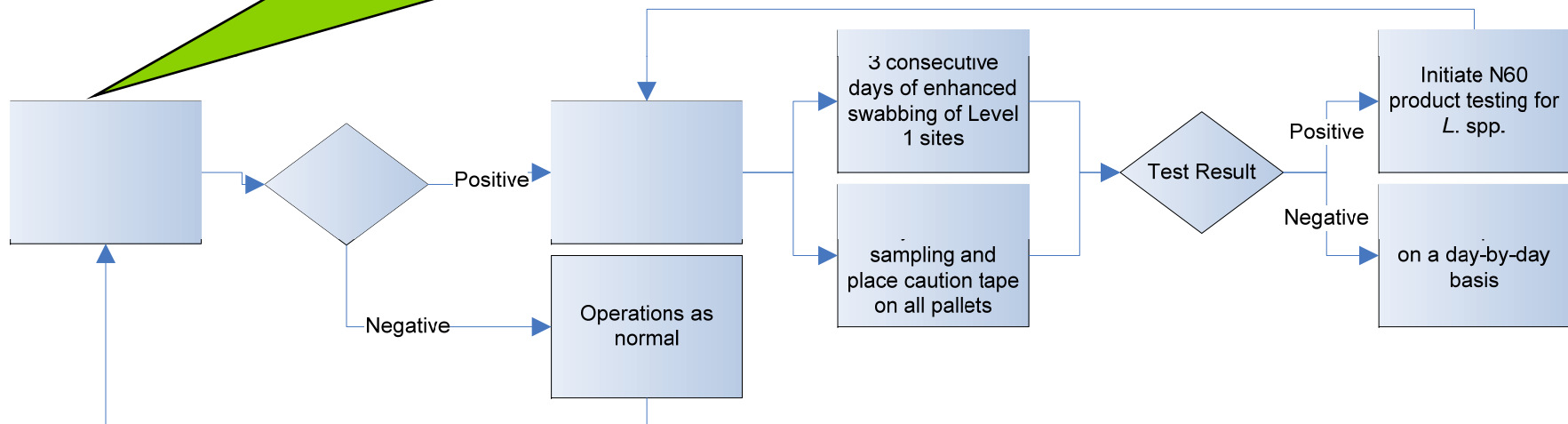
- Level 1 - Food Contact Surfaces e.g. Slicers, conveyers, peelers, tables, utensils', brine chill
- Level 2 - Non Food Contact Surfaces adjacent to RTE line e.g. equipment framework, equipment surfaces, switches, housings
- Level 3 - Non Food Contact Surfaces not adjacent to RTE line e.g. Walls, Drains, Floors, Overhead Structures, Phones, Forklifts, Jiggers
- Level 4 – Other areas in the facility e.g. Cafeteria, Hallway, Lockers, Locker Rooms





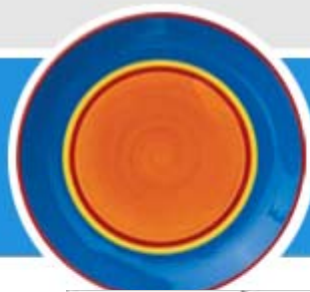
Aggressive Listeria Testing Protocol

Every production line is tested **every week** on product contact surfaces (L1 sites) and non-product surfaces (L2-4 sites)

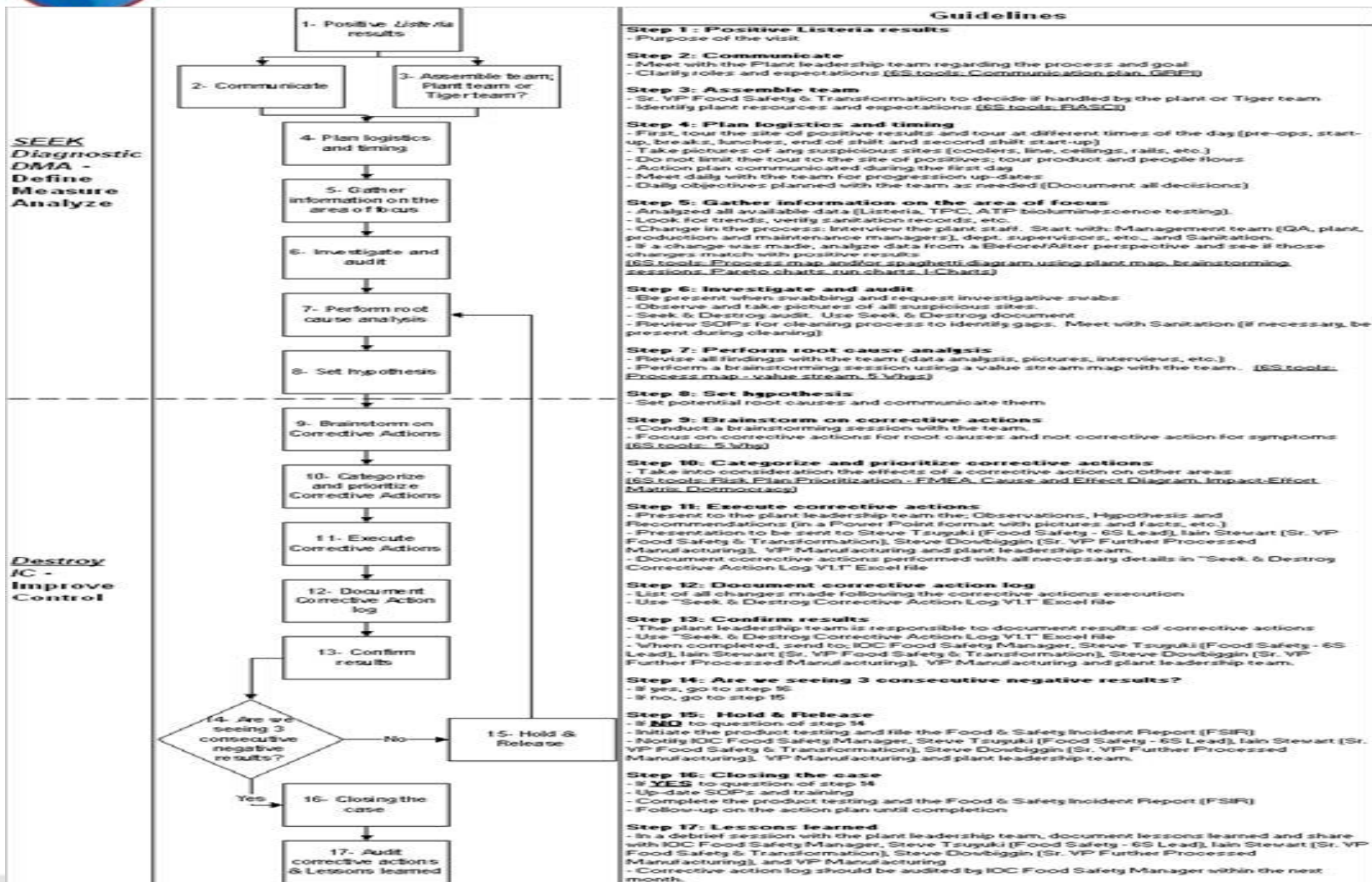


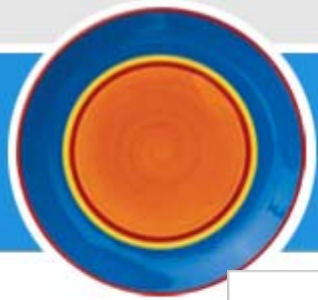
***Listeria* spp. testing will provide more positive results than testing for *Listeria monocytogenes*, giving a greater opportunity to identify sanitation deviations. This is the most conservative approach to food safety and is global best practice.**



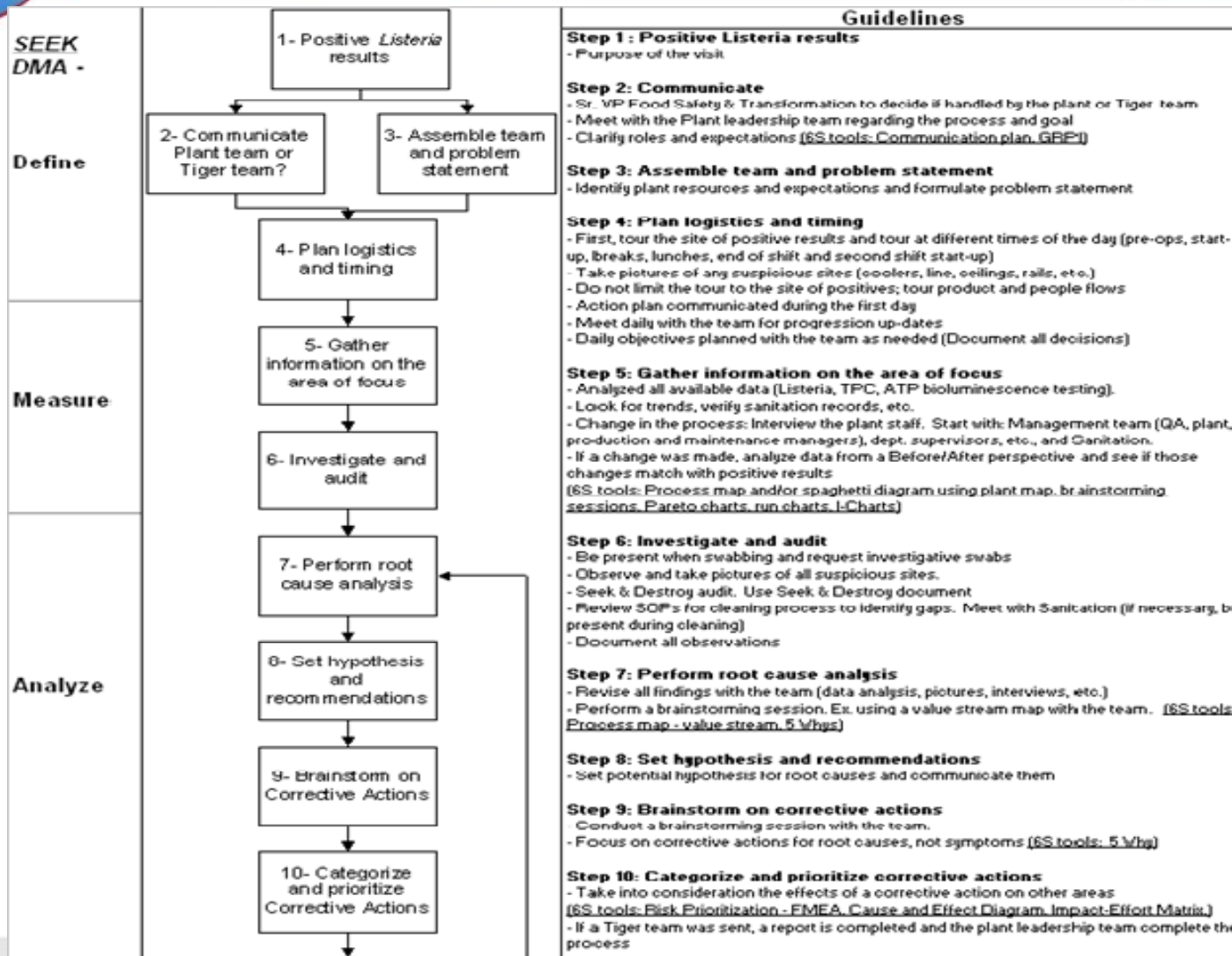


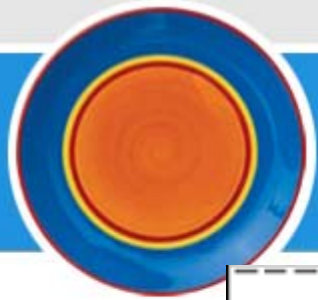
Seek and Destroy Process



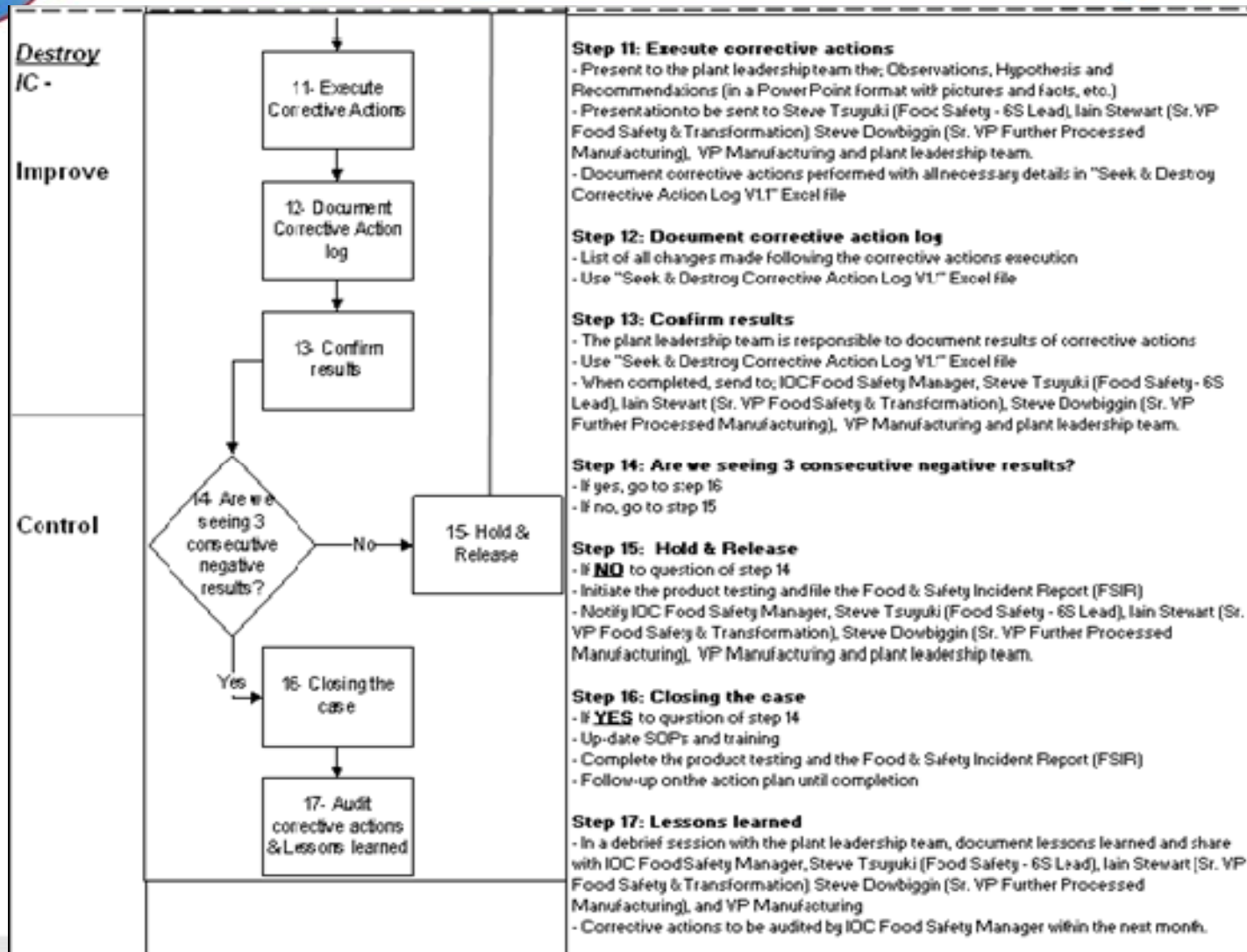


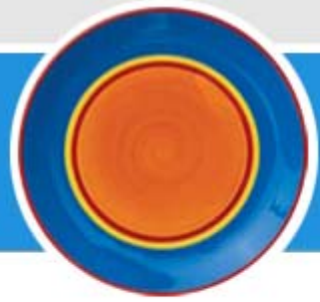
Seek – DMA (Define, Measure, Analyze)





Destroy – IC (Improve, Control)

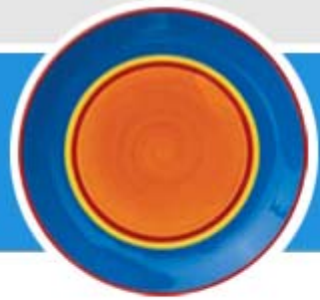




High risk situations

- Drain backup
- Use of high pressure water or air on floor or in a drain
- A packaging line is moved or modified significantly
- An equipment breakdown
- Personnel used interchangeably between raw and cooked products area (CPA)
- Construction in or adjacent to CPA
- Warm room
- Wet area or process
- Crack in floor that retains water
- Rinsing or cleaning equipment on the floor
- Others.....

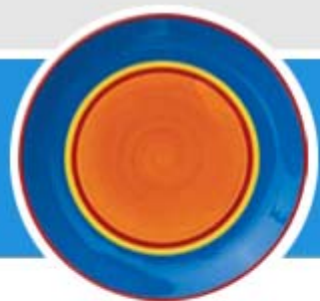




The Evolution of Environmental Pathogen Control

Stage (<i>mindset</i>)	Control Methods
Awareness	Sample Product
Enlightenment	Recognize existence of Growth niches. Sample contact and some floor and environmental to surfaces control. Starting the redesign phase.
Preventative	Potential Growth niches mapped. Some scheduled intervention practices in place. Managing “Critical Factors” of the Sanitation process. Engaged in Equipment and Facility redesign.
Predictive	Early warning sampling in place. Scheduled intervention practices in place with all RTE equipment. Focus on Zone 4 and facilities. Advanced phases of both Equipment and Facility redesign.

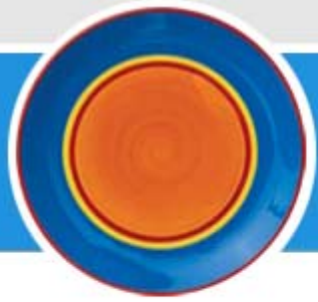




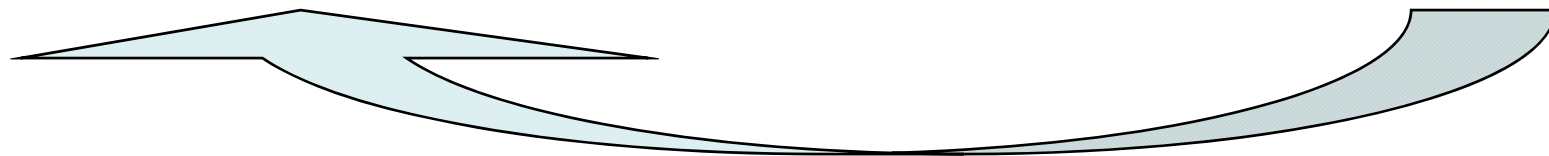
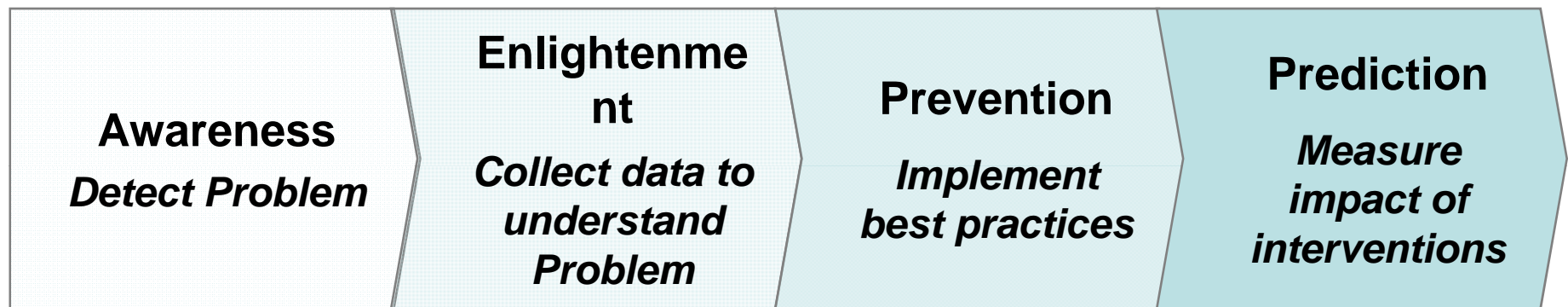
The Evolution of Environmental Pathogen Control

Stage	Sampling Results
Awareness	Contact Surface and Product positives
Enlightenment	Expanded and regular sampling of contact surfaces and environmental sites. Intermittent positives on contact surfaces. Routine positives on environmental sites
Preventative	Early preventative phase positive results dominated by environmental positives. In final phase of preventative, only rare Contact Surface positives. No Product Positives. Investigative facility based positives dominate RTE.
Predictive	No Contact surface positives. Zone 4 positives predominate. Hurdle transfer point sampling produces rare positives.

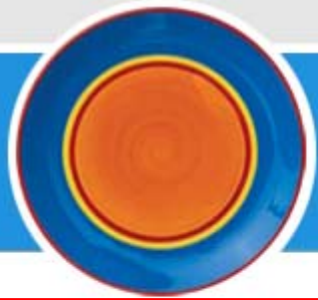




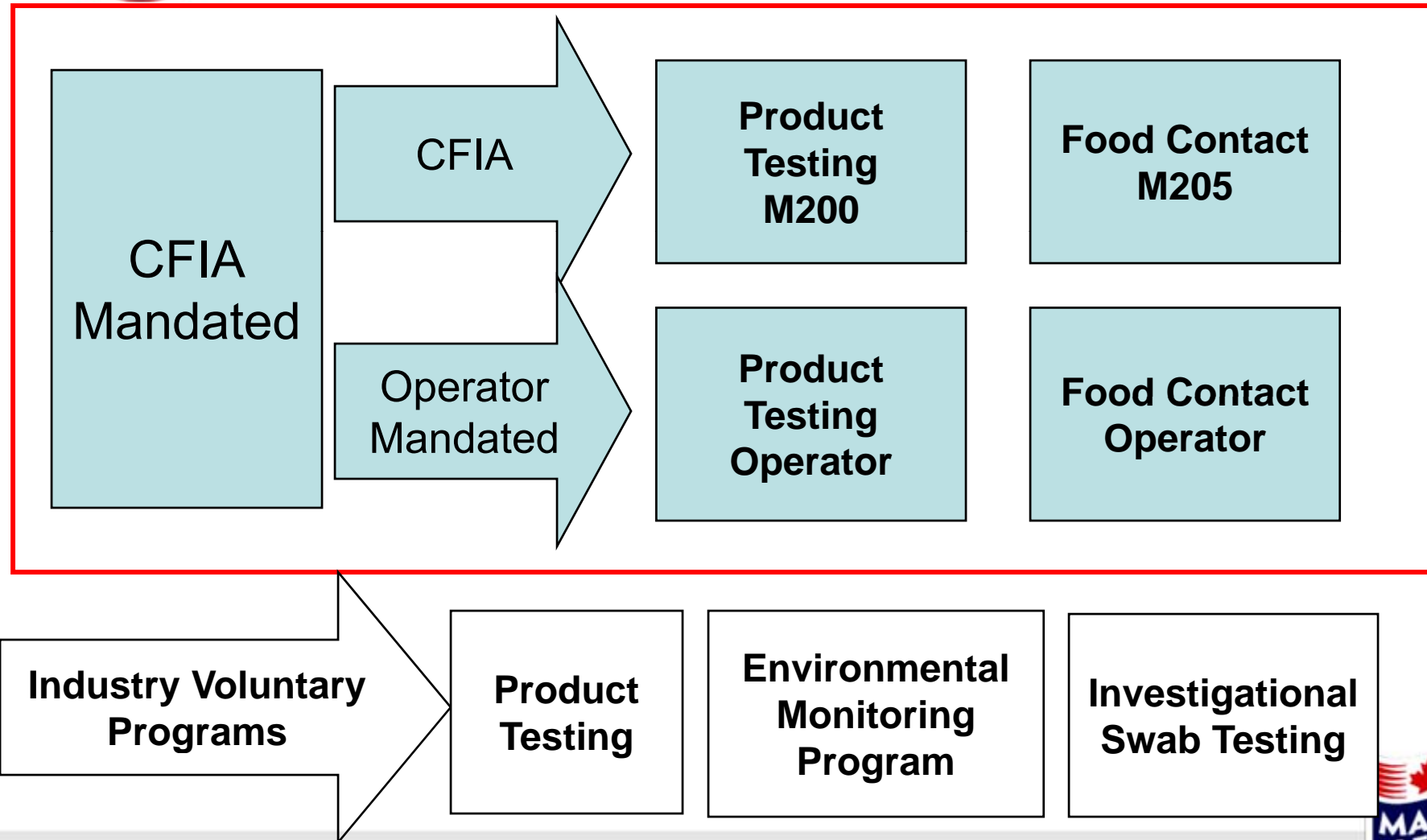
The Food Safety Journey A Continuous Process

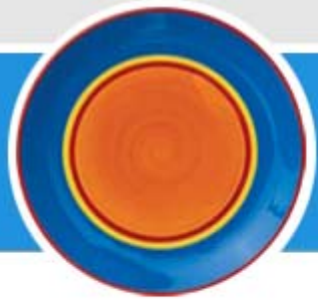


Refinement of Capabilities & Knowledge



CFIA Listeria Testing Requirements Effective April 1, 2009





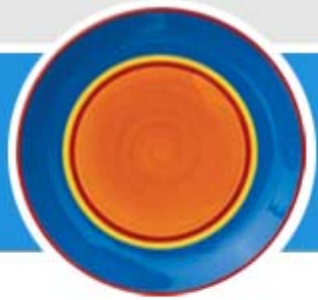
Risk Based Product Sampling

Lower risk

Alternative	Control measure	Sampling frequency
Alternative 1	AMA/P + PLT are in place	1 sample per year
Alternative 2A	PLT	3 samples per year (1 per 4 month)
Alternative 2B	AMA/P	6 samples per year (every other month)
Alternative 3	Sanitation only	12 samples per year (Once a month)

Higher risk





CFIA Requirements for Operators

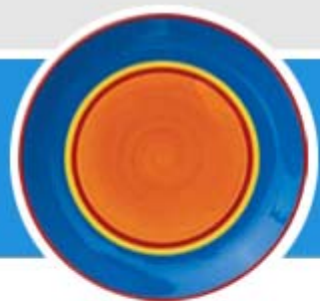
Minimum Frequency of Sampling FCS

Lower risk

Establishment Category		FCS testing
Alternative 1		2/year/line
Alternative 2		4/year/line
Alternative 3		
Non-deli, non hot-dogs		1/month/line
Deli, hot-dog	Very small vol. est.	1/month/line
Deli, hot-dog	Small volume est.	2/month/line
Deli, hot-dog	Medium volume est.	3/month/line
Deli, hot-dog	Large volume est.	4/month/line

Higher risk

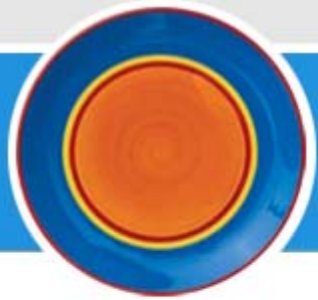




Policy Challenges

- **Turnaround time for CFIA results**
 - ▶ Requirement for accredited lab / accredited method
 - ▶ Expectation by CFIA is 5 days to result
 - ▶ Experience demonstrates avg = 6 – 10 days with example at 14 days
- **Definition of lot, line, and alternative category has been inconsistent**
- **Requirements on corrective action have lacked consistency**

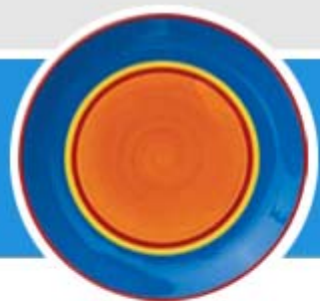




Summary of “Lessons Learned”

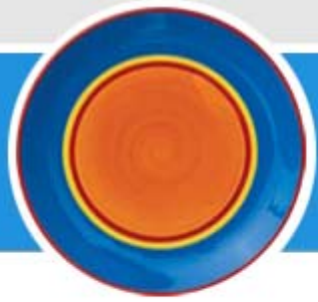
- 1. Growth niches can be identified and eliminated or managed.**
- 2. Transfer points can be identified and their effect minimized with GMP practices**
- 3. Sampling techniques such as post rinse sampling can aid in discovering problems before contact surfaces or product are engaged.**
- 4. Sanitation Process Control “Critical Factors” can provide the basis for attaining and maintaining control of microbial contaminates in High-Risk RTE areas.**





Summary of “Lessons Learned”

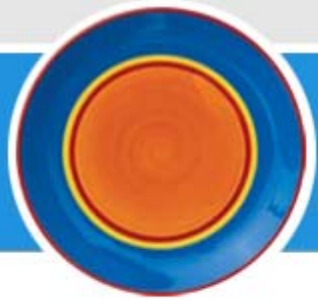
- 5. Interventions are necessary for all equipment within the Exposed Product Area**
- 6. Product, contact Surfaces, and key floor sites must be recognized as key measures of the effectiveness of the process control program in place.**



Summary of “Lessons Learned” on Listeria control activities

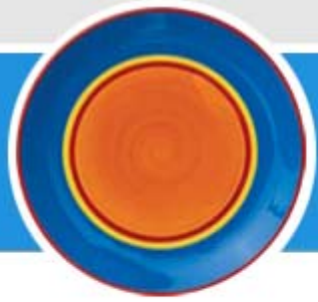
- **Data, Data, Data**
- **Let data guide decisions**
- **Sampling and testing used strategically**
- **Vigilant re-evaluation of systems is critical**
- **Industry sharing of Best Practices**
- **Avoid misconceptions – use the data**
- **Flexible regulatory approach critical**





Suggested Reading

- **AMI, 1999.** Interim Guidelines – Microbial Control During Production fo RTE Meat and Poultry Products.
- **Tompkin, R.B. 2002.** Control of Listeria in the Food Processing Environment. J. Food Protection, Vol. 65, pp 709- 725.
- **Butts, J. N. 2003** Seek and Destroy: Identifying and Controlling Listeria in Growth Niches. Food Safety Magazine, Vol. 9, No. 2.

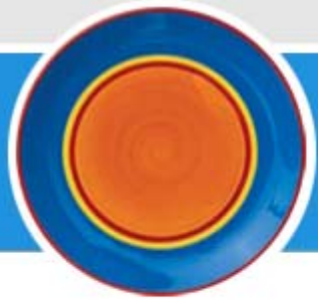


Protecting Public Health

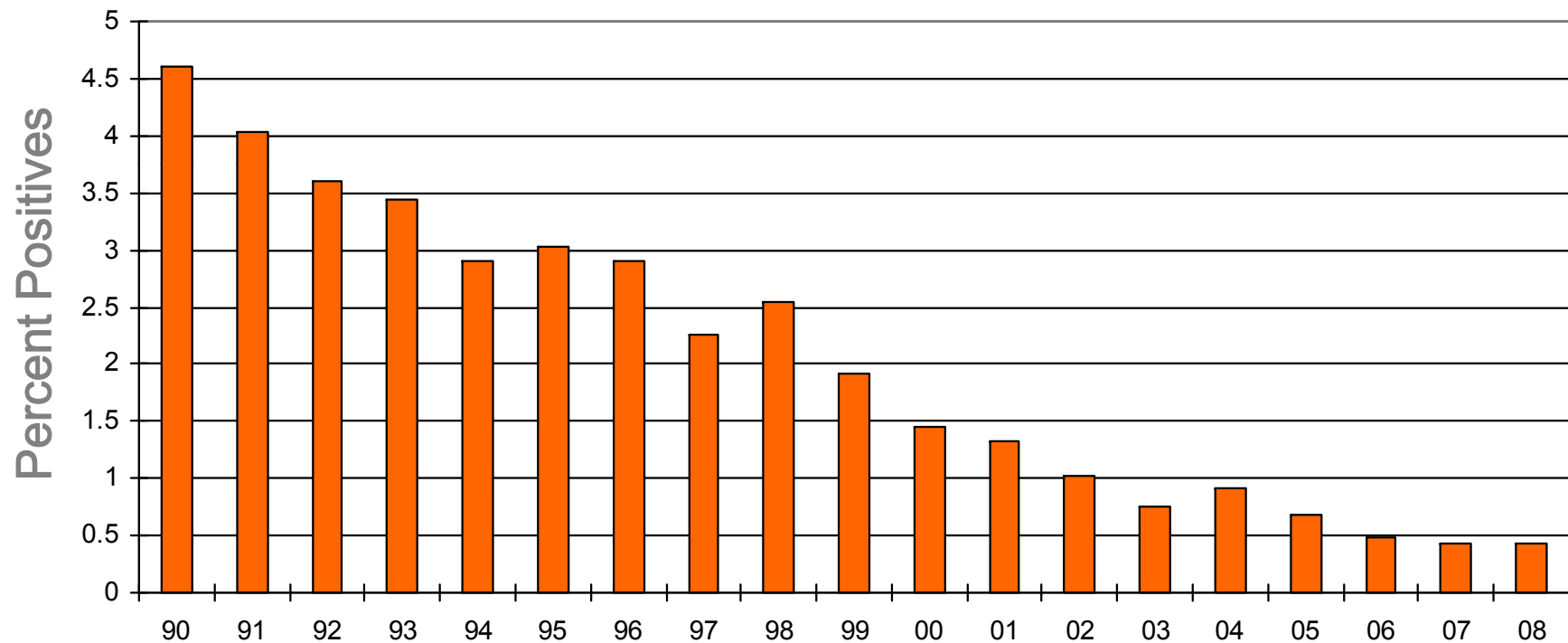
“Selling Safe Food is the Right Thing to Do -- It is Good for Business and Good for Consumers”

The Industry is Making Progress



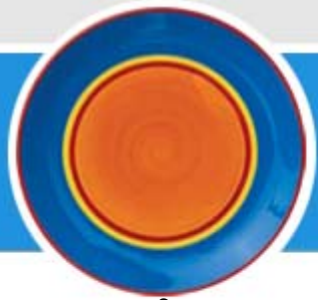


Prevalence of *Listeria monocytogenes* in RTE Meat and Poultry Products in U.S.*

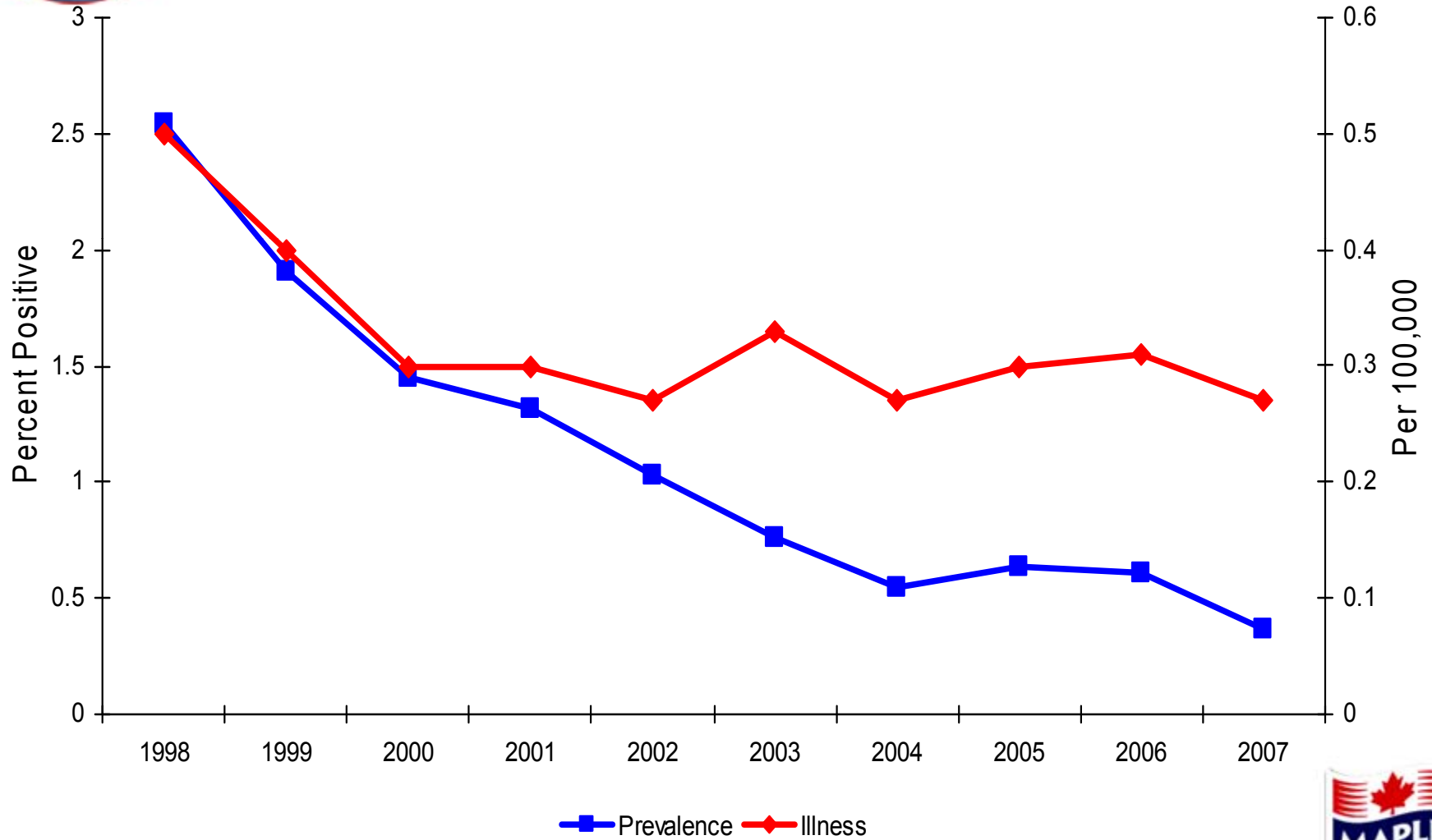


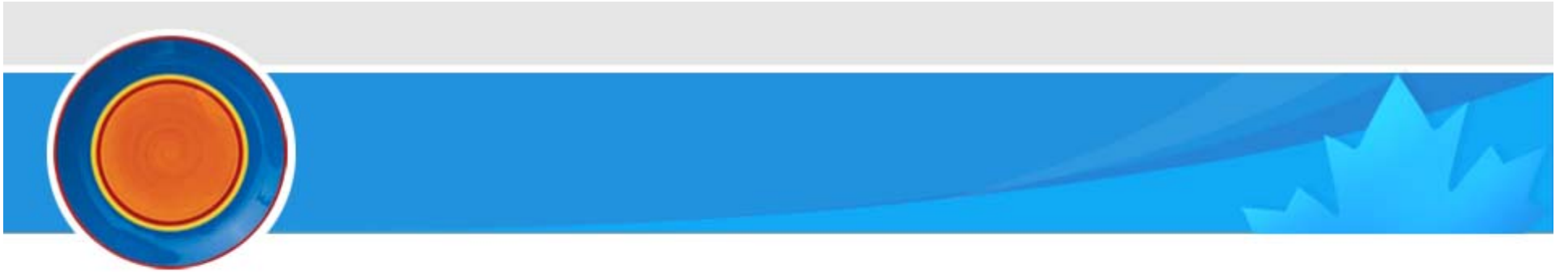
*FSIS results of routine regulatory testing of finished RTE products analyzed for *Listeria monocytogenes*. Approx. 4,000-10,000 samples taken annually.





Comparison of *Listeria* – United States Prevalence vs. Illness





Thank You