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# Report of the Independent Investigator into the 2008 Listeriosis Outbreak

July 2009

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# A message from the Investigator

When I was asked to lead the investigation into the August 2008 Listeriosis outbreak, I recognized this was not just a professional challenge but also a great responsibility. My goal, from the time I accepted this role, was to provide Canadians with answers about how and why this outbreak occurred. While examining thousands of pages of research findings, participating in hundreds of hours of interviews, and being guided by the advice of experts, I stayed committed to this objective. I felt a strong obligation to find the facts and make recommendations that will help to protect the Canadian public from future outbreaks or optimize the response if they do arise.

No one deserves answers more than the families and friends of those who died as well as the individuals who became ill. I extend my deepest sympathy, and dedicate this report, to all those who were affected by this tragedy.

Many people shared their experiences and perspectives to better understand the events that took place, and many came forward with proposed solutions to prevent similar foodborne emergencies. Over 100 interviews and fact-findings meetings were conducted with individuals from all sectors.

I learned that, in hindsight, it is much easier to see the sequence of events that led to the outbreak and to identify steps that could or should have been taken. I heard, repeatedly, that if people had only known or recognized then what they now know, these events may have evolved differently.

Despite these insights and the best efforts of everyone concerned, the fact remains: 22 lives were lost. These individuals, mostly elderly and at risk of infections, put their faith in Canada's food safety system, expecting it to protect them. Their faith, and that of all Canadians, was shaken. For all the effort of all involved, the food safety system let them down.

This is a serious matter with potentially deadly consequences for vulnerable individuals – people with compromised immune systems, the elderly, pregnant women and their newborns. Although outbreaks of listeriosis are rare, the risks of foodborne illnesses are on the rise and will only intensify in the future for reasons explained in this report. And once the bacteria causing the disease finds its way into the food chain and onto peoples' plates, it is difficult to get under control no matter how committed and dedicated those involved in food safety may be.

As we learned from this event – the worst national listeriosis outbreak in Canadian history – it is often too late to save people at greatest risk from an unnecessary illness or untimely death once food contaminated with *Listeria monocytogenes*

is on the market. It is vital that we take all necessary measures to avert another listeriosis outbreak.

Some point out that Canada's food safety approach receives high marks and is considered among the best in the world. A 2008 international food safety review ranked Canada fifth among 17 member countries of the Organization for Economic Co-Operation and Development (OECD), identifying it as a superior system.

It is true that, for the most part, Canadians can have confidence in Canada's food safety system. However, this investigation found problems that need to be addressed to better protect Canadians.

These problems, which apply not only to federal organizations but to industry and other governments as well, fell under four broad themes.

The first was an insufficient focus on food safety among senior management in both the public and private domains. Even though there was evidence of contamination on production lines producing ready-to-eat meats months before the outbreak, these trends were not being monitored to identify the recurring presence of the bacteria. There was a lack of understanding about intergovernmental protocols to deal with such emergencies, which created confusion about who should do what and when. Government approval processes for new food additives and techniques, with a direct bearing on food safety, were not prioritized or fast-tracked. Information did not always make its way to the senior ranks of the public service and company headquarters which exacerbated these challenges. There were also cases of inadequate decision making which was apparent, for example, in implementing a new program designed to improve food safety. In addition, some policies and directives were vague leaving them open to interpretation, thus creating opportunity for problems.

The second, related area of concern was the state of readiness. It appeared there was not enough advance planning and preparation on a number of fronts, which left people unprepared when the outbreak struck. Examples include the shortage of workers needed to handle surge capacity in times of emergency, summer vacation with substitutes who did not always understand their roles, the lack of exercises to sort out these issues in advance of an actual crisis, insufficient training for food inspectors charged with the new inspection procedures, and confusion over where lab samples should be sent.

The third observation was the lack of a sense of urgency at the outset of the outbreak. For instance, key pieces of information and even personnel were unavailable over a given weekend delaying decisions until the start of the following work week. Another key element was the differing views on when to warn the public about the potential harm from certain foods. Once the gravity of the situation was recognized, emergency operations centres were not immediately activated, if at all.

As well, some who might have been prominent on the national stage were not as visible as expected.

The fourth area that left room for improvement was communications – to members of groups at increased risk for listeriosis, health professionals and the general public. Canadians generally do not understand which level of government, let alone what organization has specific jurisdictional responsibility for public health or food safety. What they do know is that they want someone to explain to them, simply and clearly, what is happening and what they should be doing to protect themselves. Subsequent polling, along with the personal anecdotes of family members and others who shared their views during this investigation, indicated that communications about the outbreak did not provide the information they needed. There was near unanimous agreement that Canadians were confused following news of the food recalls.

There is no question this was a complex undertaking and everyone involved was under great pressure to deal with the foodborne emergency while responding to public concerns. I discovered how hard people worked and recognize how dedicated all those involved were in finding the source of the illness, linking the bacteria DNA fingerprints between humans and foods, removing contaminated food products from the market, communicating and managing the event.

Encouragingly, actions are underway to correct problems that were identified immediately following the event. I urge those with a role in food safety to continue to examine their policies, programs and practices and to look for long-term solutions to the remaining challenges. For, while the measures taken to date are a good start, this investigation has concluded that many areas require ongoing improvements.

Until the system is remedied, events like those of the summer of 2008 remain a real risk. That is why I am recommending changes that span all sectors – from food processors to regulators to public health professionals and individual consumers. As this report explains, ultimately, all Canadians need to take ownership of food safety because we are collectively responsible for ensuring the security of the foods we eat.

I am calling for swift and significant action in key areas that are critical to food safety – the culture of food processing companies, the design of food processing equipment, the rules and requirements for food safety set out by the federal government as well as governments' capacity to manage national foodborne emergencies. This includes governance considerations and relationships among all levels of government involved.

Equally important, I am calling on the Government of Canada to establish food safety as one of its top priorities and to report back to Canadians on the steps it

has taken to improve Canada's food inspection and food safety emergency response systems.

As much as there is a legal obligation to uphold the laws and regulations governing food safety in this country, there is a moral duty of care to consumers – especially the most vulnerable. Safeguarding Canadians must be at the centre of the consciousness and collective actions of all those involved in food safety.

It is my hope that, this time, the recommendations being offered will be acted upon. This is not the first report on food safety produced in this country that has called for fundamental change. From past food safety audits by the Auditor General of Canada to the “Farm to Fork” Haines report following the Ontario Meat Regulatory and Inspection Review a decade later, there have been repeated calls for action.

It is in the best interest of all Canadians that these recommendations be implemented. Action in these areas will not only protect Canada's food supply and the health of older Canadians and members of other vulnerable groups. It will also contribute to industry's competitiveness in a world that wants assurance that food products are safe. By being proactive, Canada can raise its global food safety ranking from superior to the best in the world. If we have good standards and regulations, good adherence to the rules and good oversight, it will be a win-win for public health and safety, national economic and employment growth, and the food industry.

It took the 2008 listeriosis outbreak to raise awareness that food safety cannot be taken for granted. We cannot wait for another foodborne emergency to occur and more lives to be lost before we act. While there will be costs in implementing some of these recommendations, the costs of inaction – whether measured by the damage to individual Canadians' lives, lost revenues and reputation for industry, or Canada's global competitiveness in an increasingly food safety conscious world – are far greater.

The lessons learned from this outbreak provide an opportunity for Canada to show leadership. I call on all sectors to step up and meet this challenge. Canadians expect no less.



# Executive Summary

This report represents the culmination of the work undertaken by the Independent Listeriosis Investigative Review, which was set up to examine the factors that contributed to the 2008 listeriosis outbreak. This tragic event resulted in serious illness for 57 vulnerable individuals and eventually cost the lives of 22<sup>1</sup> Canadians.

The Independent Investigator was appointed in January 2009 to explore how and why the outbreak happened, and to make recommendations about what can be done to prevent a similar incident in the future. This work has been driven by a determination to find answers to these questions for surviving family and friends, and others directly affected by the event. To understand the process that led to this report,

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<sup>1</sup> The number of cases reported changed over time as results were confirmed, a process that took time.



“In all likelihood, none of the individual elements that contributed to the outbreak was sufficient to have caused it alone, so each part of the food safety system must work together as perfectly as possible.”

» DR. JOHN CARSLY  
MEDICAL HEALTH OFFICER FOR THE VANCOUVER COASTAL HEALTH AUTHORITY IN BRITISH COLUMBIA  
MEMBER OF THE LISTERIOSIS INVESTIGATION EXPERT ADVISORY GROUP

please see the introduction which describes the steps taken in this review and how best to read the full report. The work of this Investigation has been complemented by the important work of the House of Commons Agriculture Subcommittee on Food Safety which has also examined many aspects of this critical matter.

This report describes the chain of events which led to the recall of 191 meat products produced by Maple Leaf Foods Bartor Road plant. The report assesses how well federal organizations and their food safety partners responded to the event. It notes best practices from other jurisdictions which have been incorporated into the recommendations.

Most importantly, the report focuses on areas which require urgent attention, providing recommendations for concrete action. The Investigation calls on governments and industry to take swift and appropriate steps to make sure a tragedy such as this doesn't happen again.

Since these main points, like the complete report, must answer the questions of a wide variety of audiences – from scientists and health professionals, to journalists and

Parliamentarians (and government officials), to food industry workers and family members – they highlight our key findings and refer to key recommendations of interest to all Canadians. To guide readers, bracketed numbers correspond to the recommendations found in the section entitled ‘List of all recommendations’ as well as embedded throughout the full report.

## Why it matters

Foodborne illness outbreaks like that of 2008 do not happen often in Canada. There has, however, been a steady increase in listeriosis cases in recent years. Since 2005, the number of cases of listeriosis reported annually in Canada has doubled. Among those at greatest risk of contracting the illness are older people – one of the fastest growing segments of Canada's population. Some 40% of those who became ill during the 2008 listeriosis outbreak died of the disease. The average age of people who had listeriosis listed as the underlying or contributing cause of death was 76.

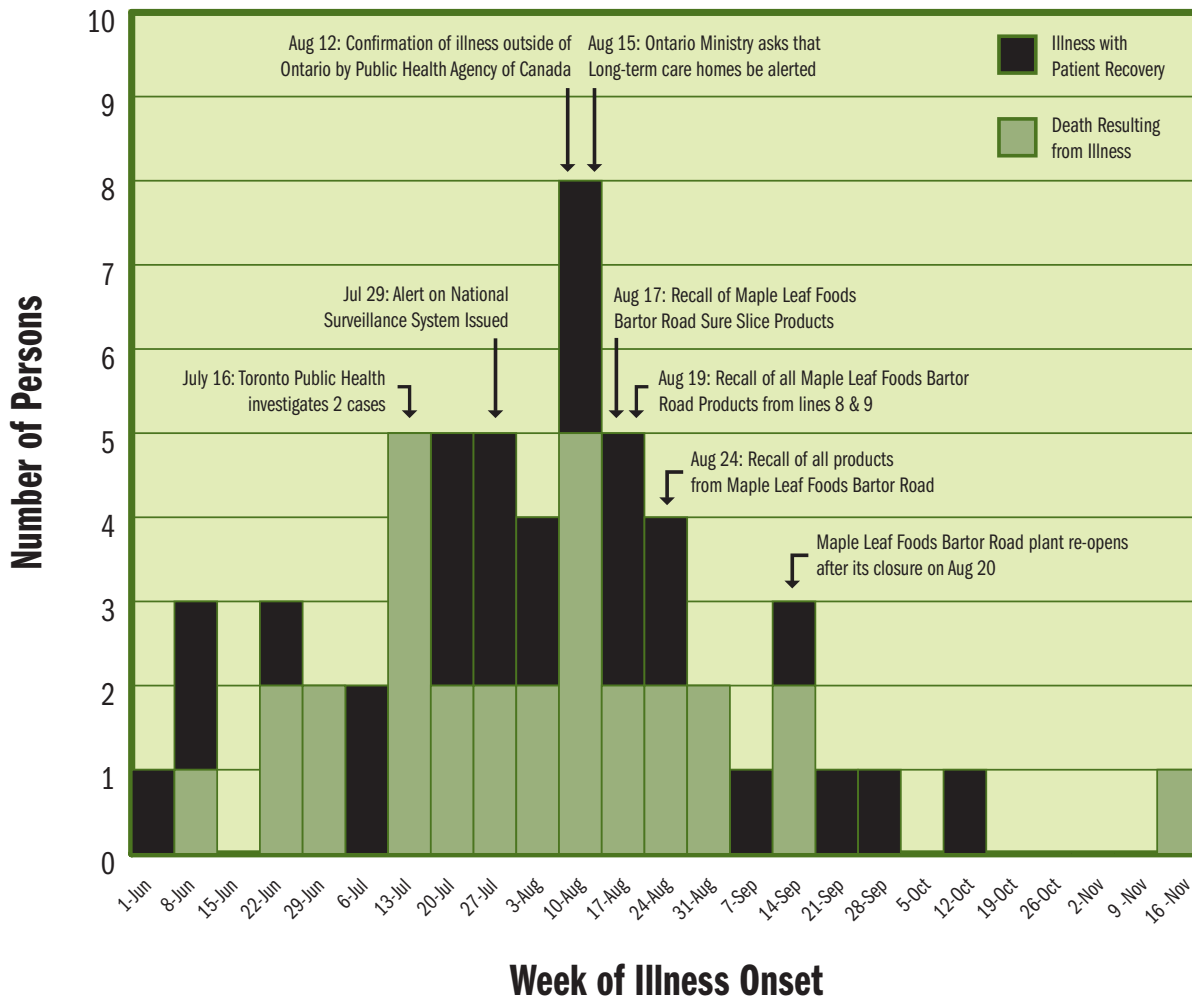
Equally noteworthy, almost 80% of those who developed listeriosis lived in a long term care home or were admitted to a hospital that had served contaminated deli-meats from large packages produced specifically for institutions.

The risks of foodborne illness are also greater than ever before. Large scale farming and food processing, along with the impacts of globalization which provide consumers with access to foods from around the world, all contribute to increased opportunities for contamination. These same trends make it harder to trace the source of a foodborne illness than in the past, when outbreaks were usually linked to local food sources.

## A complex disease

Listeriosis, itself, can be hard to detect. The first symptoms of the illness appear between three to 70 days after contaminated food is eaten and, even then, are initially difficult to distinguish from the flu. It is often only when people become seriously ill that lab tests are conducted; a positive result confirming that an individual has the disease. Unlike TV dramas, in which scientific testing produces nearly instantaneous results, it takes several days before bacteria DNA fingerprints results are available.

## Infections with the Outbreak Strain of *Listeria monocytogenes* by Symptom Onset Date or Estimated date\*



\* Some illness onset dates have been estimated from available information

The greater challenge is connecting the illness to the consumption of a specific food, a process which can take several weeks. Multiple tests are needed, often involving specialized labs, which may require inter-governmental cooperation. Not all communities can do the necessary testing to confirm that listeriosis is what is making people ill and, if so, the particular food they

ate that was contaminated. Rapid testing, analyses and reporting of test results are critical to public health and food safety investigators in a national foodborne emergency in order to identify the exact illness and the food source causing it. In light of the growing frequency of foodborne illnesses, this is equally crucial to all Canadians.

## How Canada's food safety system works

A foodborne emergency is complex because of the multiple sectors involved and the way Canada's health and food safety systems work. There are many different steps and people involved

## Key dates of the outbreak

- **February to July (2008)** - sporadic positive *Listeria* test results at Bartor Road plant
- **June 3** - earliest known human illness linked to the listeriosis outbreak
- **June 17** - first death linked to listeriosis from contaminated Maple Leaf Foods product
- **July 10** - first 2 listeriosis cases in the outbreak identified through DNA fingerprinting
- **July 18** - Maple Leaf Foods first identified as possible source of contaminated food products
- **July 22** - 11 food samples from Toronto long-term care home sent for testing
- **July 29** - more than double the normal number of listeriosis cases (24 vs. 11 expected) reported by almost half of Ontario public health units
- **August 4** - food samples from long-term care home test positive for *Listeria monocytogenes*
- **August 7** - THE CFIA initiates a food safety investigation
- **August 12** - DNA fingerprinting matches cases from several provinces
- **August 13** - Maple Leaf Foods advises distributors to hold certain products
- **August 16** - THE CFIA confirms *Listeria monocytogenes* in Maple Leaf Foods products (Sure Slice)

ateach stage in the food supply chain, including consumers themselves.

Overseeing the activities of all these groups are three levels of government, each with varying responsibilities for public health and food safety. Federal, provincial and territorial governments and local entities administer their respective laws and regulations, using their own systems and procedures.

Responsibility for food safety within the federal government is shared among Health Canada, the Canadian Food Inspection Agency (CFIA) and the Public Health Agency of Canada (PHAC). Similar functions are also performed at the provincial, and sometimes, local levels which demands close working relationships and clear lines of authority and communication in a foodborne emergency.

Because coordinating the response to large national outbreaks of foodborne disease is unusually complex, the federal, provincial and territorial governments have a joint protocol, the *Foodborne Illness Outbreak Response Protocol*, which identifies their individual roles and responsibilities in investigating and overseeing a national health emergency. It was put in place as a result of a previous national foodborne emergency.

## How events unfolded

With the benefit of hindsight, we have been able to understand the day-by-day, step-by-step actions taken as the emergency unfolded. An abbreviated chronology, found in Chapter 6, “How did events actually unfold”, as well as a fully detailed one, available in Appendix B, have been prepared to guide readers.

## What the Investigation Found

In retrospect, it is easy to see the mix of variables that created the conditions enabling listeriosis to take hold (Chapter 5). *Listeria* defeated the best efforts of all those trying to prevent it from entering the food supply, including workers attempting to control it in the Maple Leaf Foods Bartor Road plant. It also evaded the oversight systems of both Maple Leaf Foods and the federal government (CFIA). As a result, a segment of the population that is the most vulnerable was exposed to its damaging and sometimes deadly effects.

Once people were ill, there were many challenges in managing the emergency right in the middle of summer. It brought together multiple jurisdictions and two sectors of the federal government that, on a day-to-day basis are not required to work closely together: the public health and food

safety sectors. When viewed through the lens of public health, the focus is primarily on identifying what is making people ill. But when viewed through the lens of the food safety sector, the focus is primarily on identifying the exact food product that is causing the illness so that the correct food is removed from the market. This, coupled with the infrequent occurrence of such emergencies, compounded the challenges in managing this event (Chapters 7 and 8).

After in-depth analysis, and expert advice from five food safety and public health authorities, the Investigation found weaknesses in four critical parts of the food safety system which are summarized below. Our analysis has also identified additional improvements, which can be found throughout the various recommendations.

## **1. THE FOCUS ON FOOD SAFETY AMONG SENIOR MANAGEMENT IN BOTH THE PUBLIC AND PRIVATE DOMAINS.**

### **OUR KEY FINDINGS ARE:**

#### **MAPLE LEAF FOODS**

- » Maple Leaf Foods' Bartor Road plant was aware that it had occurrences of *Listeria* in the plant in 2007 and 2008, and tried to correct the problem with sanitation

procedures standard in the industry. The plant's management thought *Listeria* was under control. (Chap. 5, Rec. 5, 15 a to d)

- » Maple Leaf Foods did not conduct the trend analysis required under its *Listeria* control policy. The recurring positive results were not known nor were the positive results verified to determine the presence/absence of *Listeria monocytogenes*. At the same time, the company was producing larger packages of deli-meat products for sale to institutions, including hospitals and long-term care homes. They had created a recipe that used less sodium, which was attractive to the institutional market as many of its clients benefited from reduced-sodium diets. This combination of circumstances exposed vulnerable populations to risk. (Chap. 5, Rec. 15 e, 21)
- » Maple Leaf Foods staff notified their superiors of the repeated presence of *Listeria* beyond the Bartor Road plant into the Head Office. However, this information did not reach the office of the Chief Executive Officer because it was thought that the plant's interventions had controlled the problem. (Chap. 5, Rec. 1)
- » Employees in the Maple Leaf Foods Bartor Road plant were

not required to, nor did they volunteer, information concerning the repeated occurrences of *Listeria* in the plant to the CFIA Inspectors. (Chap. 5, Rec. 6)

#### **CANADIAN FOOD INSPECTION AGENCY**

- » A new federal inspection approach, the Compliance Verification System (CVS), was put into effect in the spring of 2008, at the same time Maple Leaf Foods' environmental testing was identifying *Listeria* at the Bartor Road plant. (Chap. 5, Rec. 10)
- » Although the CVS is regarded as a sound system and has broad support, it needs critical improvements related to its design, planning, and implementation. (Chap. 5, Rec. 10)
- » The CFIA inspectors had no obligation to request or examine the company's *Listeria* testing results under their CVS tasks. (Chap. 5, Rec. 20)
- » In the lead-up to the outbreak the number, capacity and training of inspectors assigned to Maple Leaf Foods Bartor Road plant appear to have been stressed due to their responsibilities at other plants, the complexity of the Bartor Road plant including its size and hours of operation, and necessary adjustments required by the

implementation of the CVS.  
(Chap.5, Rec. 7)

- » Due to the lack of detailed information and differing views heard, the Investigation was not able to determine the current level of resources as well as the resources needed to conduct the CVS activities effectively. For the same reason, we were also unable to come to a conclusion concerning the adequacy of the program design, implementation plan, training and supervision of inspectors, as well as oversight and performance monitoring. (Chap.5, Rec. 7)
- » The latest CFIA *Listeria* controls do not distinguish between foods at much lower risk of harbouring *Listeria* (e.g. dried sausages) and those that are much higher risk (e.g. hot-dogs). Furthermore, they do not establish 'test and hold' product controls. (Chap.5, Rec. 15 d)
- » There is a need for increased coordination and improved communication about food processing equipment among the manufacturer, the food processor, and the CFIA regarding design specifications and the validation of sanitation procedures. (Chap.5, Rec. 14)

## HEALTH CANADA

- » The Health Canada *Listeria monocytogenes* policy (currently under review) does not provide adequate direction on expected outcomes leaving room for interpretation by industry. The lack of integration with the CFIA policies creates gaps and overlaps. (Chap.5, Rec. 11)
- » In approving food additives and technologies, Health Canada has not been taking into account food safety considerations when assigning priorities or fast-tracking for approval these substances and processes. (Chap.5, Rec. 12)

## MULTI-JURISDICTIONAL EMERGENCY RESPONSE

National foodborne outbreaks are rare in Canada. Nevertheless, the *Foodborne Illness Outbreak Response Protocol* (FIORP) and complementary agreements are in place to manage such events but they were not widely known or understood by senior leadership at the time of the 2008 outbreak. (Chap.5, Rec. 24)

## 2. THE STATE OF READINESS OF THE VARIOUS GOVERNMENTS.

### OUR KEY FINDINGS ARE:

#### MULTI-JURISDICTIONAL EMERGENCY RESPONSE

- » The 2008 outbreak first emerged in Ontario and was therefore under provincial leadership.
- » At the outset, the outbreak was not considered a severe foodborne emergency. This led to a void in leadership in managing the crisis. It took close to three weeks before senior executives in all key organizations became fully engaged in the event. (Chap. 7, Rec. 24 b.i)
- » The protocol (FIORP), which is in need of updating, was not recognized as the protocol to be used. The lack of a clear understanding about which organization or level of government was responsible for doing what – including which organization should lead the response to the crisis – contributed to the inconsistent management of the outbreak. Few of those involved in the 2008 outbreak, especially senior executives, were familiar with the FIORP. (Chap. 7, Rec. 24)
- » Since national foodborne illness outbreaks of this magnitude are rare in Canada, opportunities to practice this emergency

management approach are very limited. (Chap. 7, Rec. 24 c)

- » Public health labs are not formally networked and could be more effectively used during a foodborne illness emergency. (Chap. 7, Rec. 33)
- » The Public Health Agency of Canada is making headway in epidemiological data collection and analysis in cases of *human* illness (e.g. H1N1), but improvements are still required in integrating the data collection, and analysis, of *food* samples (e.g. listeriosis). (Chap. 7, Rec. 35 c)
- » Enhanced coordination of various testing (e.g. cross-coding of human and food samples linked to the same patient) could further accelerate the analysis and decision-making necessary in the management of foodborne emergencies. (Chap. 7, Rec. 35 a)
- » Based on our investigation, to maintain confidence in the food safety system, there is a need for independent review after all national foodborne emergencies, in addition to each organization's lessons learned review. (Chap. 7, rec. 27)
- » Most organizations involved in the response to the 2008 outbreak had very limited pre-planned surge capacity. (Chap. 7, Rec. 24 b-iii and 34 b)

### 3. THE SENSE OF URGENCY AT THE OUTSET OF THE OUTBREAK.

#### OUR KEY FINDINGS ARE:

##### MAPLE LEAF FOODS

- » Maple Leaf Foods did not initially report the presence of *Listeria* at the Bartor Road plant or provide product distribution records. (Chap. 5, Rec. 6)

##### PUBLIC HEALTH AGENCY OF CANADA

- » The Public Health Agency of Canada did not consider it had the federal leadership role, therefore there was a delay in identifying the outbreak as a public health emergency. (Chap. 7, Rec. 24 b-i)

##### HEALTH CANADA

- » Health Canada's Health Risk Assessment team was not operating on a 24/7 basis during the summer of 2008, leaving gaps in coverage during the response to the emergency. (Chap. 9, Appendix C)

##### PUBLIC HEALTH AND FOOD SAFETY SECTORS

- » There are differing views on the quality of evidence needed to advise the public about potential food contamination and/or to

recall the food product. Some advocate specific laboratory confirmation to ensure the correct product is removed from the market. Others advocate for a precautionary approach, based on epidemiological evidence, to protect the public from potential harm. (Chap. 7, Rec. 24 b-iv, 29)

### 4. NATIONAL COMMUNICATIONS WITH THE PUBLIC

#### OUR KEY FINDINGS ARE:

- » Canadians were seeking reassurance from governments that public health was being protected.
- » Information about the outbreak did not provide the public with what they needed; it was sometimes inconsistent given the many jurisdictions involved, sometimes hard to find and sometimes difficult to understand. (Chap. 8, Rec. 26, 40)
- » The majority of Canadians were unaware which segments of the population were at greater risk of becoming ill if exposed to *Listeria monocytogenes*, and what foods these vulnerable groups should avoid (e.g. pointing to the need for precautionary labelling). (Chap. 8, Rec. 42).



- » There was an absence of an ‘advance’ communications strategy and related implementation plan, that should have included ready-made information products and the use of traditional and new media vehicles. (Chap. 8, Rec. 41)
- » Federal communications to the public were slow off the mark, and were not sustained for a sufficient period of time. In addition, there was no designated communications coordinator, which resulted in a fragmented approach and seemingly inconsistent messaging. (Chap. 8, Rec. 37)
- » Having the Minister responsible for Agriculture and Agri-food and the CFIA serve as the lead ministerial spokesperson, was considered by some to be a ‘conflict of interest’ even though the minister has a legitimate role in relation to the food industry. It appeared to limit government’s capacity to communicate health information sought by the public. The perceived lack of federal public health leadership during the outbreak attracted many comments. (Chap. 8)
- » The greatest challenges for physicians in educating patients about minimizing risks of foodborne illness are lack of patient-friendly materials (77%), lack of knowledge about the outbreak (69%), and lack of time (69%). (Chap. 8)

## What else was learned

The Investigation came across other matters of capacity, governance and structure affecting the response to the outbreak and meriting further examination. Progress has been made since the 2008 outbreak on a number of fronts however, there is room for ongoing improvement in the federal food safety and legislative framework. Readers are strongly encouraged to review Chapter 10 (Rec. 43, 44, 52) to gain a better understanding of the additional recommendations.

## Actions, not words

Many of the issues – and even some of the recommendations generated by this Investigation – have been raised in previous reports on food safety in Canada. Recommendations are only words on paper until they are acted on.

As foodborne illnesses are now the largest class of emerging infectious diseases in the country, and listeriosis is a serious disease with deadly consequences for vulnerable groups, governments cannot afford to ignore these findings.

That is why the Investigation recommends that, in setting its agenda for the fall of 2009, the Government of Canada should be mindful that food safety requires increased attention. Although Canada is viewed as a leader in food safety practices and systems, the Government should clearly and emphatically commit to the safety

of food as one of its top priorities. (Chap. 10, Rec. 56)

*Everyone* involved in the events leading to, and in managing the response to, the 2008 listeriosis outbreak should view the lessons learned from this tragic event and the recommendations as imposing an obligation to pursue innovation and improvement.

The Independent Investigator invites all to read the full report.



# List of all recommendations



# In the order they appear throughout the report

## CHAPTER 5 – WHAT LED TO THE OUTBREAK

**Chapter 5** – To enhance food safety awareness of meat processors including but not limited to federally registered ones:

1. The **CEO and senior management of all meat processors** should accept **oversight responsibility** for ensuring that **food safety** is fully embedded in every level of their business.
2. The CEO and senior management of all meat processors should ensure effective design and actively promote all aspects of food safety consistent with their Food Safety Plan.
3. Food safety plans should be regularly updated to ensure on-going attention to pathogen control.
4. All meat processors should ensure that new and existing equipment is and remains appropriate for the intended use.
5. **Sanitation methods** should be **validated and implemented by meat processors in consultation with the equipment manufacturer**, with a particular focus on the intended use and the products being processed on each piece of equipment.

6. To ensure **active and transparent communications**, all federally registered **meat processors should disclose any threat to food safety** occurring in their premises **to the Canadian Food Inspection Agency inspectors** in a timely manner. Meat processors should not wait for requests for information from the CFIA inspectors and should, in the interests of food safety, ensure that inspectors have all information they require.

**Chapter 5** – To consolidate the Canadian Food Inspection Agency's inspection responsiveness

7. To **accurately determine the demand on its inspection resources and the number of required inspectors**, the Canadian Food Inspection Agency **should retain third-party experts to conduct a resources audit**. The experts should also recommend required changes and implementation strategies. The audit should include analysis as to how many plants an inspector should be responsible for and the appropriateness of rotation of inspectors.
8. The Canadian Food Inspection Agency should ensure that inspectors receive timely education and training specific to each function which they perform. This should be based on an assessment of the additional training required to address gaps in the knowledge and abilities of

inspection staff. Inspectors should regularly receive a mandatory program on current trends in science and technology in the processing of food, including compliance and verification processes.

9. The Canadian Food Inspection Agency should equip its inspectors with modern technology (e.g. e-note pad) to increase their efficiency.
10. The Canadian Food Inspection Agency should **amend its meat inspection system (CVS)** to ensure:
  - a. the **appropriate human resources** are available to respond to workload requirements;
  - b. **comprehensive training** based on required competencies and skills;
  - c. timely delivery of on-going training;
  - d. supervision of inspection staff structured to encourage enterprise and accountability.

**Chapter 5** – To improve the *Listeria* Policy

11. Health Canada should complete the **revision of its 2004 *Listeria* Policy**, by no later than March 2010, and ensure that:
  - a. the Policy outlines clearly and concisely the **expected results for all identified food products where *Listeria* is a potential threat to human health**, consistent with international standards;

- b. risk categories of ready-to-eat product are retained, although they should be more clearly defined;
- c. post-processing measures that control *Listeria monocytogenes* are considered when determining product risk categories; and,
- d. it focuses only on the safety of foods (i.e. should be a food safety standard) and not on providing risk management direction to the food industry or the Canadian Food Inspection Agency.

**Chapter 5** – To provide more responsive solutions to improve food safety

**12.** Health Canada should **review its approval processes and fast track**, where appropriate, new **food additives and technologies** that have the potential to **contribute to food safety** giving particular **attention to those** that have been **scientifically validated in other jurisdictions** (provinces or countries).

**Chapter 5** – To improve sanitation of food processing equipment

**13.** Manufacturers of food processing equipment should ensure that their specifications and instructions to users specifically emphasize the necessity to control the risk of pathogens, including *Listeria monocytogenes*.

**14.** In addition, **manufacturers of food processing equipment** should accept responsibility for the foreseeable impact of the design and operation of their equipment on food safety. The **design and operation of, and recommended sanitation methods for all food processing equipment** should:

- a. **enable thorough cleaning and disinfection**;
- b. allow for efficient and complete disassembly and reassembly when required;
- c. **eliminate to the fullest extent possible all areas likely to harbour pathogens**, including *Listeria monocytogenes*;
- d. wherever possible, use material that is scientifically validated to limit pathogen growth or survival; and
- e. be peer-reviewed (applicable only for the recommended sanitation methods).

**Chapter 5** – To enhance the effectiveness and timeliness of the Canadian Food Inspection Agency’s food safety requirements

**15.** The Canadian Food Inspection Agency, in conjunction with and in conformity to the proposed revisions to Health Canada’s *Listeria* Policy, should strengthen its **February 2009 *Listeria* controls found in the Meat Hygiene Manual of Procedures to focus on control measures for *Listeria*** in ready-

to-eat meat products, in addition to the current environmental and product testing:

- a. to ensure that **any required testing is a verification step to confirm the effectiveness of the company’s *Listeria* control program** and not a control program in itself;
- b. by **differentiating the testing requirements to reflect the risk** associated with each product (i.e. more testing for high risk products and less for low risk ones);
- c. by requiring the testing of non-food contact surfaces in the processing environment;
- d. by **establishing ‘hold and test’ product control requirements following positive test results for *Listeria* on food contact surfaces** as follows:
  - i. *several tests for *Listeria* on food contact surfaces should be conducted immediately on and around the area where positive results were found to determine:*
    - » *if there is persistent contamination, or*
    - » *if the previous positives have already been dealt with using standard sanitation procedures;*
  - ii. *if the follow-up tests are positive, then testing for *Listeria monocytogenes* must occur in products from the*

*production line of concern<sup>1</sup>. During this testing phase, all products produced on that line and day (i.e. between two complete sanitation shifts) should be withheld from the marketplace until the results are known;*

- e. by further **defining expectations of trend analysis to identify weaknesses in the company's control programs** (including its HACCP plan) by determining if a pattern of contamination is emerging.

- 16.** The Canadian Food Inspection Agency should revise its monitoring programs (M-200 and M-205 plans), by tailoring the sampling frequencies to each plant based on risk factors including compliance history, product risks and target market (i.e. higher sampling frequency in some plants, lower in others.)
- 17.** The Canadian Food Inspection Agency should review and update existing food safety programs, regulations and directives to best reflect current food safety practices.

**18.** The Canadian Food Inspection Agency should update its *Food Safety Enhancement Program Manual* to require food processors to include all standard operating procedures and good manufacturing practices in their food safety plan.

**19.** The Canadian Food Inspection Agency should ensure that the *Meat Hygiene Manual of Procedures* is updated whenever there is a significant change to the practices imposed on industry.

**20.** The Canadian Food Inspection Agency should formally communicate its expectation that registered meat processors will bring all information with potential consequences for food safety to the attention of their assigned inspector in a timely manner.

**Chapter 5** – To protect vulnerable populations

**21. Organizations providing housing and/or food services to seniors and other vulnerable groups,** including long-term care homes and hospitals, should be encouraged to **adopt food safety practices aimed at vulnerable populations**, including those most vulnerable to listeriosis (such as the practices set out in the British Columbia Guideline for Food Services or in guidelines issued by the other provinces and territories.)

**Chapter 5** – To improve surveillance

**22.** The federal, provincial and territorial governments should continue to use and support surveillance and monitoring systems, such as Canadian Integrated Outbreak Surveillance Centre (CIOSC), and consider the development of next generation systems (e.g. Panorama).

## **CHAPTER 7 – HOW WELL DID THE FEDERAL GOVERNMENT AND ITS FOOD SAFETY PARTNERS RESPOND TO THE OUTBREAK**

**Chapter 7** – To improve national foodborne emergency leadership

**23.** The Public Health Agency of Canada, with the support of the Canadian Food Inspection Agency and Health Canada, should assume the leading role in coordinating the federal government's response to a national foodborne emergency.

**Chapter 7** - To improve national foodborne emergency preparedness

**24. In preparedness for national foodborne emergencies, the federal, provincial and territorial governments should:**

- a. complete the revision of the Foodborne Illness Outbreak Response Protocol (FIORP) currently underway, at the earliest opportunity; and
- b. **enhance the FIORP, by developing and ratifying a Foodborne Illness Emergency Plan** building on the experience

<sup>1</sup> The testing requirements (e.g. number of tests) should be based on an authoritative source such as the International Commission on Microbiological Specifications for Food and should be consistent with the Health Canada's *Listeria* Policy.

of the Canadian Pandemic Influenza Plan, to:

- i. **designate the Public Health Agency of Canada as the lead Agency** taking leadership at both the national (multi-provincial/territorial) and the federal (multi-departmental);
- ii. use a common incident command structure;
- iii. define the **roles and responsibilities of each of the organizations** involved clearly and concisely, in plain, unambiguous language, **including surge capacity**;
- iv. **increase the use and timing of health advisories and precautionary warnings**, where reasonable and probable grounds exist, to advise consumers to suspend consumption of suspected foods while tests to confirm the precise source are pending, taking into account
  - » suspected illnesses and deaths,
  - » geographic distribution, and
  - » test results of opened or unopened food samples.
- v. create a ready-to-implement crisis communications plan to ensure that all Canadians are kept informed in a timely and detailed manner (including

*pre-arranged media spots, pre-developed material, and the like*); and

- vi. **share all information, including epidemiological data, needed to identify the emergency** taking into account privacy and data confidentiality issues;
  - vii. include in the FIORP **periodic mock exercises** to validate that the protocol and its Emergency Plan are fully understood by federal, provincial, territorial and local governments as well as by the food processing and distribution industry and is in a state of readiness.
25. The authority of the federal Minister of Health to protect the health of all Canadians under section 30.1 of the *Food and Drugs Act*, and subsections 4(1) and (2) of the *Department of Health Act* should be used in a national foodborne emergency, whenever warranted.
  26. **Where human deaths or serious illnesses have occurred**, the Canadian Food Inspection Agency should **promptly disclose the results of its investigation of the implicated plant** and the corrective actions taken, to the public and food safety partners.
  27. The **federal government** should **establish an independent post-**

**event review process** made up of a **pre-identified team of experts** not involved in the emergency. Following all future national foodborne emergencies, this team should conduct an in-depth review and report to the government. The **report should be made public.**

**Chapter 7** – To better manage national foodborne emergencies

**28.** In the event of a national foodborne emergency, an incident command structure should be activated under the leadership of the Public Health Agency of Canada with the direct participation of the Canadian Food Inspection Agency and Health Canada.

**Chapter 7** – To clarify the ‘weight of evidence’ needed to recall food products

**29.** Health Canada, the Canadian Food Inspection Agency and the Public Health Agency of Canada should **review, update and publish the criteria for proceeding with a food recall to ensure that the weight of evidence takes into account epidemiological information**, including suspected illnesses and deaths, geographic distribution, and food sample test results whether packages are opened or unopened.

**30.** The Canadian Food Inspection Agency should encourage federally regulated meat processors to move

beyond the minimum existing requirement for accessibility of distribution records to include electronic access in non-proprietary and unlocked formats to assist in potential product recalls.

31. The Canadian Food Inspection Agency should establish a formal protocol to ensure that timely and consistent information is provided to staff of the provincial/territorial or local public health organizations who are asked by the Agency to help it complete post-recall verification activities.
32. In providing information related to a given product recall to the distribution industry, including grocers, the Canadian Food Inspection Agency should use a standardized form (as suggested by the Canadian Council of Grocery Distributors).

**Chapter 7** – To enhance the responsiveness of laboratories to national foodborne emergencies

33. Given that **laboratories across Canada** are not networked, the federal, provincial and territorial governments should proceed to **establish a nationally integrated network (i.e. network of networks)** among the following:
  - a. human disease labs (where this has not yet occurred),
  - b. food labs,
  - c. animal labs, and
  - d. **all of the above.**

34. This **network** of federal, provincial, territorial, local and private **laboratories** should be integrated to ensure:

- a. rapid tests, analysis and reporting of test results into monitoring and surveillance systems, on a priority basis; and,
- b. the identification of back-up capacity to support regional and local gaps and **surge capacity** needs during a national foodborne emergency.

35. Federal, provincial and territorial governments should **review laboratory procedures and methodologies to develop consistent practices in testing for foodborne diseases**, against predetermined benchmarks and giving priority to the following:

- a. **cross-coding human samples and corresponding food samples in order to accelerate the linkage of test results;**
- b. agreeing to protocols designed to accelerate the process for accrediting public (by the federal government) and private (by the provinces) laboratories for *Listeria monocytogenes* DNA fingerprinting;
- c. **standardizing methodologies for the collection and retention of food samples**, including the requirement that all *Listeria monocytogenes*

positive food isolates be forwarded to a designated lab for DNA fingerprinting;

- d. developing and delivering the necessary training required to ensure that laboratories have built-in human resources redundancy;
- e. ensuring that positive *Listeria monocytogenes* isolates are held for at least six (6) months to facilitate the comparison of data and to accelerate the identification of potential outbreaks, and
- f. researching and applying novel and emerging lab technologies.

36. Federal, provincial and territorial governments and their research funding agencies should initiate and support further research into:
  - a. testing for, and control of, *Listeria monocytogenes*;
  - b. improved traceability technology and methodology; and
  - c. novel and emerging laboratory technologies.

## **CHAPTER 8 – HOW WELL WERE COMMUNICATIONS HANDLED**

**Chapter 8** – To enhance communications during a national foodborne emergency

37. The **Public Health Agency of Canada** should **assume the lead role (non-ministerial) in communicating to the public** for a national foodborne emergency.



**38.** The Canadian Food Inspection Agency and the Public Health Agency of Canada should enhance their public profile to increase awareness of their mandates.

**39.** The principles of risk communications should drive the federal communications strategy and activities. Therefore, the Health Canada/Public Health Agency of Canada Risk Communications Framework should be implemented and become the principal reference point and standard for federal government communication to the public on foodborne emergencies, such as listeriosis.

**40. Communications staff** should be aware of developing trends in communication and ensure the capability exists to **use the best vehicles** available to **reach key audiences** as quickly as possible.

A **'one-stop' website** capability should be developed in order to provide easier public access to crucial information. Accountability for its maintenance should be clearly identified.

**41.** A series of **communication measures** that will contribute to an acceptable level of **preparedness** should be identified and put into place.

These would include simulation training, contingency planning to ensure availability of key resources and ready access to outside suppliers. The measures should also include the **preparation of certain communications material in advance**, such as basic information on listeriosis and other foodborne illnesses for at-risk populations and health providers.

It would also include the development of a communications strategy, based on solid marketing research and analysis, and a related implementation plan. The strategy should identify the target audiences, their information requirements, and how and by whom they are best reached.

**Chapter 8** – To increase consumer awareness

**42.** To **protect vulnerable populations**, including the immuno-compromised, older people and pregnant women, Health Canada should promote consumer education into the risks associated with *Listeria*. This could include targeted measures, such as **precautionary labelling**. This should be accomplished in collaboration with the Public Health Agency of Canada and in conjunction with provincial and territorial health partners.

## **CHAPTER 10 – WHAT ELSE DID WE LEARN DURING THIS INVESTIGATION?**

**Chapter 10** – To modernize the federal regulatory framework on food safety

**43.** To **simplify and modernize federal legislation and regulations** which significantly affect food safety, the Government of Canada should **mandate a lead agency to conduct a comprehensive review** and recommend improvements in a timely manner, taking into account the **amendments or additions required to enforce**, where applicable, the **recommendations included in this report** (e.g. the requirement to disclose any threat to food safety as covered by recommendations 6 and 20).

**Chapter 10** – To enhance the governance of food safety in Canada

**44.** As soon as possible, the **Canadian Food Inspection Agency, supported by independent experts**, should initiate a **comprehensive review** of

- its **organizational structure**;
- the current delegation of **responsibility and lines of accountability** within the Agency; and
- its **decision-making processes**.

**45.** Concurrent with the review, the federal government should consider replacing the current requirement for an Advisory Board with a Board of Management which, subject to powers to be retained by the

Minister including all decisions related to policy, legislative, regulatory and emergency matters, should oversee the organization and operational management of the Agency, and advise the Minister on policy matters.

At a minimum, the federal government should consider the immediate appointment of the Advisory Board established under subsection 10 (1) of the Canadian Food Inspection Agency Act. The Board should be specifically directed to advise the Minister on issues relevant to the vision, accountability, mandate, and public perception of the Agency and risk management.

46. The federal government should endorse the need for continuity and vision at the Canadian Food Inspection Agency by making efforts to ensure, wherever practical, that the 5-year mandate given to the President under section 5 of the *Canadian Food Inspection Agency Act* is fulfilled.
47. As a regulatory agency, the Canadian Food Inspection Agency should create a formal and transparent consultation strategy which will define its required engagement with stakeholders.
48. To ensure timely and consistent enforcement practices across the country, the Canadian Food Inspection Agency should review the interpretation and application of its rules and enabling legislation.

**Chapter 10** – To enhance proactiveness of the Canadian Food Inspection Agency

49. The three main lines of business of the Canadian Food Inspection Agency, food safety, animal health, and plant health should be assisted by permanent expert advisory committees to guide their evolution.

**Chapter 10** – To ensure prompt response to food safety situations

50. The Office of Food Safety and Recall should report directly to the office of the President of the Canadian Food Inspection Agency.

51. The Canadian Food Inspection Agency should ensure that the Office of Food Safety and Recall has dedicated resources to undertake all the CFIA activities concerning recalls. The Office of Food Safety and Recall should be identified as the CFIA's primary point of contact with Health Canada during a national foodborne emergency.

**Chapter 10** – To enhance the federal governance of public health

52. As soon as possible, the **Public Health Agency of Canada, supported by independent experts, should initiate a comprehensive review** of its structure and operational procedures with the objective of ensuring a **more responsive and flexible organization** to support national readiness for public health threats.

53. Concurrent with the review, the federal government should consider permanently assigning day-to-day operational management responsibilities of the PHAC to an associate deputy head (i.e. a Chief Operating Officer equivalent to a second-in-command) to allow the Chief Public Health Officer to focus on his executive duties and responsibilities as the lead health professional of the Government of Canada in relation to public health and to ensure continuity of management.

At a minimum the day-to-day operational management responsibilities of the Chief Public Health Officer of the Public Health Agency of Canada during a national foodborne emergency, should be temporarily assigned to an acting deputy head for the PHAC until the end of the emergency.

**Chapter 10** – To improve how federal organizations collaborate on food safety

54. The Clerk of the Privy Council should appoint an independent expert to chair a special committee of the deputy ministers responsible for Health Canada, the Public Health Agency of Canada, and the Canadian Food Inspection Agency. The chair should report to the Clerk directly. This committee should provide recommendations to improve

the ways the organizations work together in their roles in food safety. It should also oversee the development of our proposal to simplify and modernize federal legislation and regulations.

The first tasks of this committee should be to reduce overlaps and address gaps among the organizations, improve communication and the sharing of information, resolve existing issues preventing harmonization of roles, and provide a report on these matters within six months.

**Chapter 10** – To improve how the federal, provincial and territorial organizations collaborate on food safety

**55.** Considering the serious implications of foodborne illnesses, governments should create a distinct federal, provincial and territorial committee reporting regularly to the federal Minister of Health. The Minister should share the progress of this committee with his provincial and territorial ministerial counterparts regularly.

This committee should enable national preparedness for foodborne outbreaks. One of its first tasks should be to develop and implement programs alerting vulnerable populations to the risks of listeriosis and identifying recommended sanitation and prevention practices.

The committee should be composed of officials from the Health and Agriculture Ministries across Canada, the Canadian Food Inspection Agency, and the Public Health Agency of Canada.

**Chapter 10** – To demonstrate the Government of Canada’s commitment to food safety

**56.** In **setting its agenda for the fall of 2009**, the government should be mindful that due to globalization and increased Canada-wide production and distribution of food, food safety will require increased attention. Although Canada is already a leader in food safety practices and systems, the **government should clearly and emphatically commit to the safety of food as one of its top priorities.**

**57.** Following its receipt and review of this report, the government should commit to reporting back to Canadians, within two years, on the implementation of the recommendations contained in this report together with an assessment of their impact on improving Canada’s food inspection and food safety emergency response systems.







# CHAPTER 1

## How did we approach this report?

### How did we approach this report?

The summer of 2008 will be remembered by many Canadians for the listeriosis outbreak that made national and international headlines – an event that, ultimately, claimed 22 Canadians' lives and touched many more.

Hundreds of news stories and website blogs as well as 'lessons learned' reports have been written about the outbreak. Yet, despite the thousands of words used to describe these events, many questions remained unanswered – particularly for survivors and family members of those who died. This report is an attempt to fill that gap.

## Dr. Michael Doyle

“The responsibility for food safety is not restricted to one person or one entity. There is a network of people and organizations responsible.”

» DR. MICHAEL DOYLE  
REGENTS PROFESSOR OF FOOD MICROBIOLOGY AND DIRECTOR OF THE CENTER  
FOR FOOD SAFETY AT THE UNIVERSITY OF GEORGIA  
MEMBER OF THE LISTERIOSIS INVESTIGATION EXPERT ADVISORY GROUP

Before reviewing this document to find out who did what and when, it is helpful to recognize that the issues involved in the outbreak were complex. These issues involve the constitutional relationship between the federal and provincial governments in public health and food safety. They involve the mandates and legal relationships among three federal organizations, their provincial counterparts and food processors. Finally, they involve the complex world of science and technology.

This report examines the way these relationships played out during the 2008 listeriosis outbreak and the response of the various parties involved. It also focuses on ways in which government, industry and others with a role in food safety can work better in the future to reduce the risk that the tragic events of the summer of 2008 will be repeated.

## About the Listeriosis Investigative Review

At the height of the nation-wide recall of contaminated ready-to-eat meat products, on September 3, 2008, the Prime Minister announced an independent investigation into the events surrounding the 2008 listeriosis outbreak. On January 20, 2009, Sheila Weatherill was appointed by the Governor in Council to lead the Independent Listeriosis Investigative Review.

The Independent Investigator’s mandate was to review the August 2008 listeriosis outbreak, focusing on all the meat products involved in the disease outbreak, and the subsequent recalls of foods, originally produced at the Maple Leaf Foods’ Bartor Road plant. Specifically, the Investigation was set up to:

- » Examine the events, circumstances and factors that contributed to the listeriosis outbreak;
- » Review the efficiency and effectiveness of the response of the federal organizations, in conjunction with their food safety system partners, in terms of prevention, recall of contaminated products, and collaboration and communication with their food safety system partners and consumers; and,
- » Make recommendations, based on lessons learned from that event and from other countries in terms of best practices, as to what can be done to enhance both the prevention of a similar outbreak occurrence in the future and the removal of contaminated products from the food supply.

This report represents the results of this Investigation.

## Approach

The Investigation needed to be both methodical and systematic to ensure it explored the factors that played a role in the 2008 listeriosis outbreak to contribute to future policy decisions and/or to improve industry practices.

### EXPERT ADVICE

During the investigative process, advice was received from a group of expert advisors made up of respected Canadian and US food safety and public health authorities. The group was consulted on the approach and methodology used to guide the work of the Independent Investigator. The experts reviewed and commented on this report during its development.

In addition to scientists, external specialists from the medical, public health, food safety, long-term care, legal, communications and governance fields provided advice throughout the process to assist the progress of the Investigation.

## COMPREHENSIVE REVIEW

To the extent possible, the investigative team considered all viewpoints and implemented necessary measures to be fair and balanced. Considerable effort was made to ensure this was both a comprehensive and inclusive process.

Forensic investigators and technology experts collected and analyzed in excess of 5.8 million pages of information received in both paper and electronic forms, including emails. They scanned and processed this information into a database used to search and target

relevant information. This material established the key facts and assisted the Independent Investigator in formulating questions for interviews.

Much more than a paper exercise, the Independent Investigator also conducted more than 100 interviews

## Who we interviewed

In total we conducted over 100 interviews and meetings representing several hundred hours. We also received over 5 million pages of information.

### FEDERAL ORGANIZATIONS

- » Ministers (Agriculture and Agri-Food Canada and former Minister of Health)
- » Auditor General of Canada
- » Staff from Prime Minister's Office
- » Ministers' Chiefs of Staff and Advisors
- » Deputy Ministers (AAFC, HC, PHAC, CFIA, PCO)
- » Former CFIA Presidents
- » Staff from CFIA, PHAC, HC and PCO
- » Unions

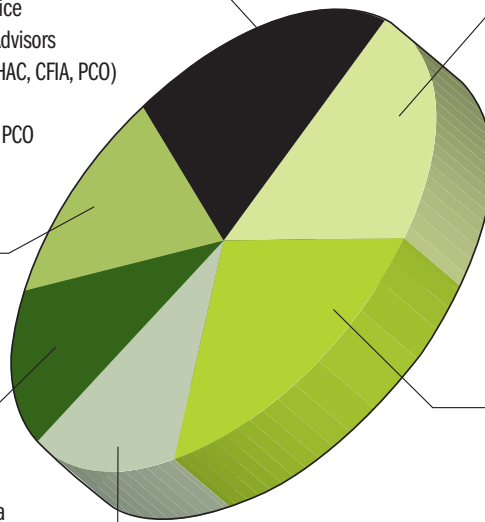
### EXPERTS

- » Governance
- » Public health
- » Food safety
- » Laboratory
- » Long term care

### CONSUMERS

- » Consumers Council of Canada
- » Union des consommateurs
- » Option consommateurs

AAFC Agriculture and Agri-Food Canada  
 CFIA Canadian Food Inspection Agency  
 PHAC Public Health Agency of Canada  
 HC Health Canada  
 PCO Privy Council Office



### HEALTH SECTOR PROFESSIONALS

- » Deputy Ministers of Health and Chief Medical Officers of Provinces & Territories
- » Canadian Medical Association
- » Local Medical Health Units (Toronto, Peel, Hastings and Prince Edward County)
- » Ontario Agency of Health Promotion and Protection
- » Urban Public Health Network
- » Long term care homes

### FOOD PROCESSING INDUSTRY

- » Maple Leaf Foods Inc.
- » Canadian Meat Council
- » Canadian Council of Grocery Distributors
- » Food Processors of Canada
- » Canadian Poultry and Egg Processors Council
- » Further Poultry Processors Association of Canada
- » Innovotech
- » GS1 Canada
- » FORMAX Inc.

### FAMILIES AND THE CANADIAN PUBLIC

with a broad cross-section of individuals having first-hand knowledge of the events. These included workers on the plant floor, executives, frontline public health and food safety workers, researchers and scientists, managers, deputy ministers and Ministers from the federal and provincial governments, representatives from consumer and industry associations and unions, and family members of those who died and whose lives were personally touched by the tragedy.

The Independent Investigator appreciates the significant cooperation received from those affected by the listeriosis outbreak, both directly and indirectly. Everyone who was asked to participate agreed to be interviewed. The Investigator received open and forthcoming information and advice. It was clear that people wanted to provide information to be part of the solution.

A number of roundtables with food safety experts – drawn from industry, consumer groups, academia and government – were convened to learn more about the latest technologies and industry practices. Information sessions were also held with food processors, equipment manufacturers, grocers and others with valuable insights into food safety to learn of their experiences and to seek their counsel.

As valuable as the lessons learned from the events of 2008 are, as part of the Investigation we examined and obtained advice from experts into the experiences of other jurisdictions.

Key best practices or alternative approaches to food safety are referred to throughout the report.

This work has been complemented by the important work of the House of Commons Agriculture Subcommittee on Food Safety which has also examined many aspects of this critical matter. We also heard from many of the witnesses who appeared before the Subcommittee, and we have taken account of what we heard from them and on occasion what they have said during the public hearings of the Subcommittee.

## LISTENING TO CANADIANS

The Independent Investigator also reached out and listened to Canadians to consider their views and concerns. Many interested Canadians contacted her to express their positions on the issues being examined. The Investigator received hundreds of emails from private citizens. Many more visited the website to learn about the Investigation. From the time of its launch on January 23, 2009, the Listeriosis Investigative Review web site averaged approximately 300 visits per week.

This level of interest reinforced a further consideration in preparing this document: the need to make it both understandable and accessible to a wide array of interested readers – from people affected by the outbreak to Parliamentarians.

There are many potential audiences for this report. Given the complex

nature of the subject matter, some of the information contained in this report may appear technical to people unfamiliar with the terminology used, especially scientific, medical and legal. Translating the full range of information gathered through this Investigation in a clear and straightforward way that all Canadians can understand has been an overarching goal in preparing this document.

In order to follow the report's findings, it has been structured to provide answers to the key questions many Canadians have about the 2008 listeriosis outbreak and what can be done to prevent a similar incident in the future. Our aim has been to lay out the information in a way that chronologically and logically explains the chain of events which culminated in the outbreak, follow-up by the actions in the aftermath of the event, as well as the areas that continue to require attention and action.

The Independent Investigator is confident that this report will assist in answering Canadians' questions about what happened during the 2008 listeriosis outbreak, how it could have happened, and what should be done to make sure it never happens again.

### NEXT CHAPTER

“Before the summer of 2008, most Canadians had probably never heard of listeriosis...”



# CHAPTER 2

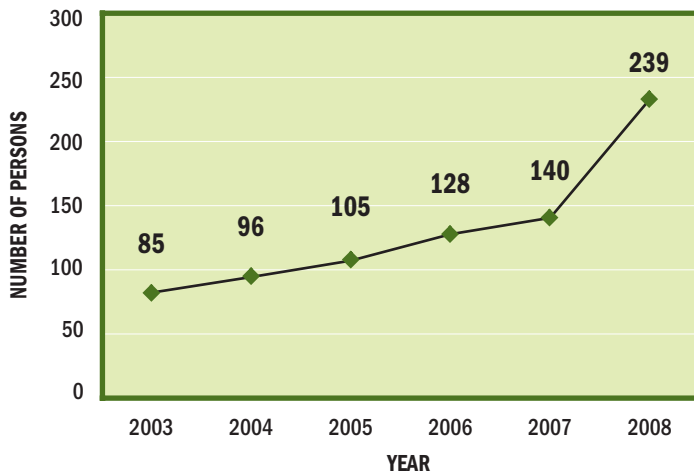
## What is listeriosis?

### What is listeriosis?

Before the summer of 2008, most Canadians had probably never heard of listeriosis. That's not surprising, since the disease is far less common than other forms of foodborne illness such as *Salmonella*, *E. Coli* or the Norwalk virus.

There are more than 250 different foodborne illnesses that can be caused by a variety of bacteria, as well as viruses, parasites and toxins. According to the Public Health Agency of Canada, there are as many as 11 to 13 million cases of food-related illness in Canada annually. Of these, listeriosis cases are in the low hundreds.

## REPORTED CASES\* OF LISTERIOSIS IN CANADA, 2003-2008



\*Number of cases in 2008 is preliminary and is subject to change and includes the 57 associated with the 2008 outbreak

Source: Public Health Agency of Canada

While listeriosis may be rare, it is a very serious form of foodborne illness. It accounts for only a fraction of all reported foodborne illnesses each year but is responsible for about one-quarter of all deaths resulting from them.

Nearly all cases of listeriosis are thought to be foodborne. The illness results from eating food contaminated with a bacterium called *Listeria monocytogenes*.

*Listeria* organisms are widespread in the world around us, including in soil, water and vegetation. Animals and humans can carry the bacterium without knowing it. Even farm animals

that appear healthy can carry *Listeria* and contaminate food such as meats and dairy products. Plants and vegetables can also become contaminated with *Listeria* from the soil, water and manure-based fertilizers.

*Listeria* can be present in an assortment of foods we routinely eat, including prepared meats such as cold cuts and hot dogs, soft cheeses and fresh fruit and vegetables. Unpasteurized (raw) milk and foods made from unpasteurized milk may also contain *Listeria*.

Most of us can consume products containing *Listeria monocytogenes*

without getting ill, because our immune systems are strong enough to fight off infection. Healthy adults and children occasionally get infected with *Listeria*, but rarely become seriously ill.

Listeriosis is the name given to any form of disease or invasive infection caused by *Listeria monocytogenes*. It primarily affects older people, adults with compromised immune systems and in, about one-third of cases, pregnant women and their newborns. People in these groups are at higher risk of disease because their weakened immune systems make them more susceptible.

One unusual characteristic of *Listeria* infection, mild or invasive, compared to other foodborne illnesses is that the time between consumption of a contaminated food and the onset of illness is much longer. It ranges from three to 70 days, with a median of three weeks. In contrast, *Salmonella* infection occurs within 12-72 hours after eating a contaminated food.

The early symptoms of listeriosis can easily be initially mistaken for the flu. However, the illness soon becomes severe enough to send the person to a physician or hospital.

The most common forms of listeriosis are:

- » Sepsis (bloodstream infection)
  - patients have high fever and appear very ill. Infection of the heart valves can occur and other organs can also become infected

### Professor Rick Holley

The organism [*Listeria*] ... will grow very, very slowly at refrigerator temperatures, so four degrees [Celsius] is not a problem. And it will get to very, very high numbers over a period of 59 days, which is the shelf life of a cooked, cured meat product in a vacuum package. It does not need oxygen. And it will also grow at body temperature, and we know that because it kills people."

» PROFESSOR RICK HOLLEY,  
PROFESSOR OF MICROBIAL ECOLOGY OF FOOD SPOilage AND FOOD SAFETY, UNIVERSITY OF MANITOBA  
MEMBER OF THE CFIA'S ACADEMIC ADVISORY PANEL

## Dr. Walter Schlech

“Listeriosis implies a disease state and means an invasive infection with *Listeria monocytogenes* not just colonization of the gastro-intestinal tract by the organism. In fact the risk-assessment literature suggests that most people probably ingest the bug around ten times a year without being infected by it.”

» DR. WALTER SCHLECH  
PROFESSOR OF MEDICINE IN THE DALHOUSIE UNIVERSITY FACULTY OF MEDICINE, MEMBER OF THE  
DIVISION OF INFECTIOUS DISEASES, INVOLVED IN LISTERIA RESEARCH SINCE 1980  
MEMBER OF THE LISTERIOSIS INVESTIGATION EXPERT ADVISORY GROUP

- » Infection of the central nervous system (usually meningitis) – symptoms can include high fever, intense headache, neck stiffness, altered consciousness and convulsions
  - » Miscarriage, still birth or premature delivery of a newborn. The infected pregnant woman may have only a mild flu-like illness herself. If a baby is infected by its mother at the time of birth, it can develop blood stream infection or meningitis
- Because the disease does not have specific symptoms, listeriosis

is generally not diagnosed until the laboratory reports that *Listeria monocytogenes* has been cultured from blood, cerebrospinal fluid or amniotic fluid. The treatment for listeriosis is antibiotics, usually given intravenously. Despite treatment, up to 20-30% of cases end in death.

In Canada, the number of people who become seriously ill with listeriosis has been increasing steadily, from 85 cases in 2003 to an estimated 239 cases in 2008. Most cases have been isolated ones and not associated with outbreaks.

Listeriosis outbreaks<sup>1</sup> are rare, although Canada has experienced a number over the years.

## Preventing listeriosis

*Listeria* organisms are so widespread that it is difficult, if not impossible, to keep them out of the foods we eat.

*Listeria* is more resistant than most bacteria to sanitation measures and treatments used to control foodborne pathogens, which are micro-organisms that can cause disease. It is very hard to remove the bacterium once it has attached itself to solid surfaces where it continues to flourish. Unlike most pathogens, *Listeria* can survive and grow – even in vacuum-packed products

<sup>1</sup> An outbreak is defined as occurring when two or more people experience similar illness after consuming food from a common source.

## Listeriosis outbreaks in Canada

There have been other listeriosis outbreaks in Canadian history.

- In the summer of 2008, coincidentally, there was an unrelated outbreak of listeriosis linked to cheese which occurred in Quebec. There were 38 confirmed cases associated with this outbreak and two deaths. Twenty-six of the cases were women, 13 of whom were pregnant. Three of the pregnant women lost their babies at birth or soon after and five gave birth prematurely.
- In 2002, an earlier listeriosis outbreak in Quebec involved 17 cases and was also associated with cheese.
- In 1981, a significant listeriosis outbreak in Nova Scotia resulted in 41 cases and 18 deaths. In this incident, the contamination was traced to coleslaw. Cabbages grown on a farm where *Listeria*-contaminated sheep manure was used as a fertilizer were found to be the source of the outbreak. At the time, it was the largest outbreak of its kind in the world and the first time that *Listeria monocytogenes* was proven to cause foodborne illness in humans.



## SUGGESTED PRECAUTIONS FOR HIGH-RISK INDIVIDUALS

Foods to Avoid:	Safer alternatives:
<p>Hot dogs, especially straight from the package without further heating. The fluid within hot dog packages may contain more <i>Listeria</i> than the hot dogs.</p> <p>Avoid spreading fluid from packages onto other foods, cutting boards, utensils, dishes and food preparation surfaces. Wash hands after handling hot dogs.</p>	Hot dogs reheated until steaming hot
Non-dried deli-meats	Dried and salted deli-meats such as salami and pepperoni, as they generally do not support the growth of <i>Listeria</i> . In addition, risk can be reduced by reheating deli-meats until steaming hot.
Soft and semi-soft cheeses such as feta, Brie, Camembert and blue-veined cheese if they are made from unpasteurized milk	Pasteurized milk and milk products including cheeses made from pasteurized milk
Refrigerated pâté and meat spreads	Canned or shelf-stable pâté and meat spreads
Refrigerated smoked seafood and fish	Cooked refrigerated smoked seafood and fish. Canned or shelf-stable smoked seafood and fish.
Raw or undercooked meat, poultry and fish	Thoroughly cooked meat, poultry and fish

Source: Health Canada - <http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/food-aliment/listeria-eng.php#mi>

or in foods kept in cold storage. In fact, studies have shown *Listeria* can be found in home refrigerators.

Given that it is so pervasive in our everyday lives, totally eliminating the risk of *Listeria* infection is not possible. Therefore, it is essential to reduce and manage the risks that contaminated food will be eaten. This is precisely what government regulations and food processing companies' food safety policies and practices are designed to do. These regulatory and manufacturing approaches to making food safe from *Listeria* contamination will be described elsewhere in this report.

There are also important steps that we can take as individuals to prevent illness. For listeriosis, special measures are required to protect people who are most vulnerable, such as pregnant women, the elderly and those with compromised immune systems. For instance, luncheon meats, deli-meats and hot dogs should not be eaten by people in these groups unless they are steaming hot while certain foods, such as unpasteurized soft cheeses, refrigerated pâtés, meat spread or smoked seafood, should be avoided altogether.

### NEXT CHAPTER

“By the end of the 2008 outbreak, listeriosis was confirmed in 57 people and was reported as the underlying or contributing cause of death for 22 of these individuals...”



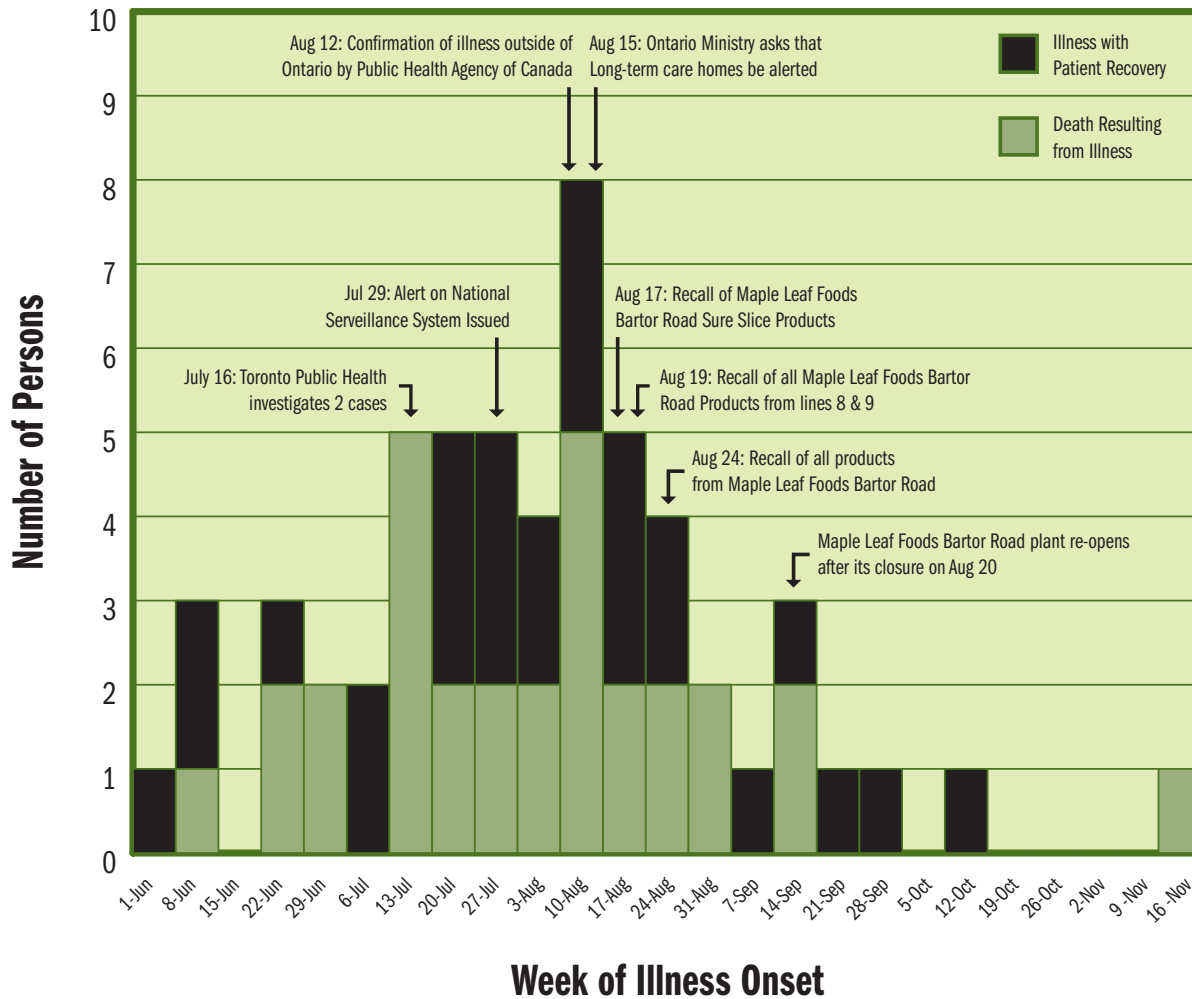
# CHAPTER 3

## Who was affected by the 2008 outbreak?

### Who was affected by the 2008 outbreak?

By the end of the 2008 outbreak, listeriosis was confirmed in 57 people and was reported as the underlying or contributing cause of death for 22 of these individuals. Though the majority were in Ontario, illnesses occurred in seven provinces.

## Infections with the Outbreak Strain of *Listeria monocytogenes* by Symptom Onset Date or Estimated date\*



\* Some illness onset dates have been estimated from available information

**Figure 1** – Confirmed cases of listeriosis by week of illness onset, Canada 2008

Source: Public Based on data from Health Agency of Canada

These numbers do not adequately describe the human impact of this outbreak, which affected mostly frail, elderly individuals living in long-term care homes. Several people hospitalized because of other diseases, such as cancer that weakened their immune systems that left them susceptible to *Listeria* infection, also

fell ill. Whatever their age or personal circumstances, listeriosis took a terrible toll on their lives and those of their families. Forty percent of those affected in this outbreak died of this serious illness.

Some of the *Listeria monocytogenes*-contaminated products that caused the outbreak were specifically packaged

for the very institutions where these vulnerable people were most likely to be found.

The 2008 outbreak analysis shows that almost 80% of those who developed listeriosis lived in a long-term care home or was admitted to a hospital that had served deli-meats taken from large

packages contaminated with *Listeria monocytogenes*.

The following graphs and tables show some of the key characteristics of the listeriosis outbreak. The cases included in the provincial and national analyses are those that meet the national outbreak case definition of a 'confirmed'<sup>1</sup> case of listeriosis. The Public Health Agency of Canada (PHAC) defines a case as "a person in the population or study group identified as having a particular disease."<sup>2</sup>

Case definitions are established for surveillance purposes by PHAC in collaboration with heads of public health of the provinces and territories.

Figure 1, which is called an epidemiological curve, shows that the majority of persons became ill in July and August 2008. In retrospect, the first person who developed listeriosis as part of the outbreak became ill on June 3<sup>rd</sup> and the last person developed illness on November 22<sup>nd</sup>.

<sup>1</sup> Confirmed cases: Isolation of *Listeria monocytogenes* from a normally sterile site, including fetal gastrointestinal contents, with the following PFGE pattern (Scientifically referred as LMACI.0040, LMAAI.0001/.0003 or LMACI.0001, LMAAI.0001); Symptom onset (date of isolation of asymptomatic) on or after June 1, 2008; and, visitor to or resident of Canada.

<sup>2</sup> [http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/glossa\\_e.html](http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/glossa_e.html)

Development of listeriosis after the three main food recalls took place is not surprising, given the long incubation period and the possible delay of up to 70 days for illness to develop after eating contaminated food. In addition, some people consumed previously frozen deli-meat packages they had not thrown away when the recalls were made public. They, unfortunately, consumed contaminated product when they defrosted their reserve (*Listeria monocytogenes* survives freezing).

Most of the affected people were very old, again unsurprising because so many were residents of long-term care homes. According to an analysis<sup>3</sup> of the 56 confirmed cases, the average age was 74 and 68% of those who became ill were female. The youngest person affected was aged 29 and the eldest was 98. The average age of people who died and had listeriosis listed as the underlying or contributing cause of death was 76 years. No pregnant women were identified among confirmed cases.

Among 56 confirmed cases in November 2008, 44 individuals (79%) had been in long-term care homes, hospitalized or had made frequent out-patient visits to a hospital at

<sup>3</sup> Multi-provincial outbreak of listeriosis – brief epidemiological update, 30 November 2008, Public Health Agency of Canada. Unpublished report produced before the last confirmed case was reported.

## Suggestion

"Health care institutions should place signs outside the doors of immune-compromised individuals indicating that they should not be served ready-to-eat meats or food from outside the facility."

» A SUGGESTION BY A FAMILY AFFECTED BY THE OUTBREAK

some point during their incubation period. Of these confirmed cases, four out of five indicated they had eaten deli-meats, two reported not eating any deli-meats (but were in an institution before becoming ill) and no consumption information was available for the remaining 10 cases. The pattern of illness in the 2008 listeriosis outbreak reflects the distribution of contaminated deli-meats primarily to institutions where it was served to vulnerable individuals.

Another quite reasonable assumption by the public, at the time of the outbreak, was the general belief that 'ready-to-eat' meats such as cold cuts are safe to eat without the need for additional preparation. The operators of hospitals and long-term care homes served the ready-to-eat food products – working from the assumption, based on years of experience, that the products were nutritious, easy to chew and safe – without taking extra precautions.

People in these high-risk groups need protection from potentially contaminated foods – something that

did not happen in the case of all the Canadians who, in 2008, learned first-hand the serious and frequently fatal consequences of exposure to *Listeria monocytogenes*.

## NEXT CHAPTER

The federal, provincial, territorial and municipal governments (and/or Regional Health Boards) have shared responsibility for food safety as a result of the division of powers in Canada's Constitution..."



# CHAPTER 4

## How does Canada's food safety system work?

### How does Canada's food safety system work?

#### **RESPONSIBILITIES OF THE VARIOUS ORGANIZATIONS INVOLVED**

The federal, provincial, territorial and municipal governments (and/or Regional Health Boards) have shared responsibility for food safety as a result of the division of powers in Canada's Constitution. The food processing sector also has its own legal obligations related to the production and sale of safe foods. And all of us as consumers have a role to play. Some of these responsibilities are unique while others are shared. To help understand why the 2008 listeriosis outbreak was so complex and difficult to address, it is helpful to have a clearer sense of who does what.

## CONSUMER

While this report focuses on food processors and governments, as consumers we have to be mindful that we also have a role to play. Food safety depends as much on our own individual actions as those of others.

Many people will be surprised to learn that foodborne illnesses are usually the result of the things individual consumers do – or do not do – once purchased food is taken home from the store. Research indicates that the vast majority of foodborne illnesses (up to 97%) are because of the way people store or prepare food. Keeping our families safe from harmful bacteria also depends on making sure we do simple things like clean, separate, cook and chill<sup>1</sup> our foods.

That said it is important to emphasize that consumer practices were not a contributing factor in the 2008 listeriosis outbreak.

## FOOD PROCESSING INDUSTRY

Food processors provide a critical link in the food supply chain, which begins at the farm gate and ends at your plate. There are many different steps and people involved at each stage starting with farmers and ranchers, followed by employees in slaughter facilities and food processing plants, as well as those working in the transportation, distribution and warehousing sectors, restaurants and

grocery stores. Whatever their role, all of those engaged in the food supply chain have a responsibility to ensure that they take all necessary measures to ensure the foods Canadians eat are safe.

Food processors take various ingredients, including vegetables, flour, eggs and meat, and transform these raw materials into a variety of new food products that generally have a long shelf life.

Meat processors represent the largest sector of Canada's food processing industry, accounting for 10% of Canada's agri-food shipments and employing more than 63,000

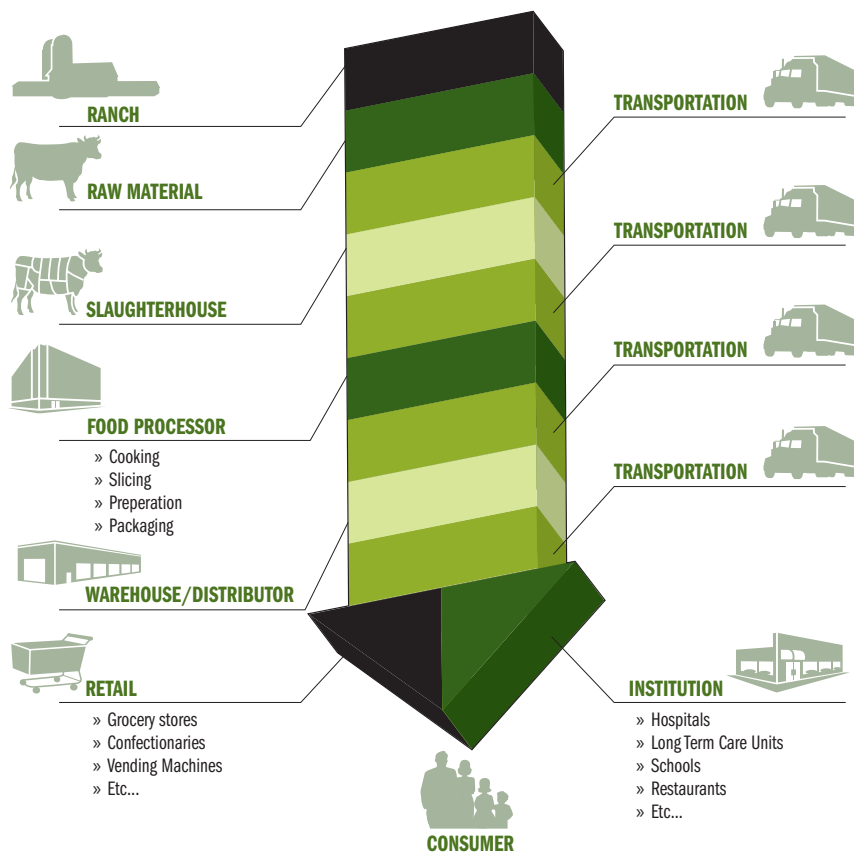
## Food-borne diseases

Food-borne diseases pose a considerable threat to human health and the economy of individuals, families and nations. Their control requires a concerted effort on the part of the three principal partners, namely governments, the food industry and consumers.

<http://www.who.int/mediacentre/factsheets/fs124/en/index.html>

Canadians. It is also one of Canada's leading manufacturing sectors with annual sales of over \$20 billion.

## FOOD DISTRIBUTION CHAIN



<sup>1</sup> Canadian Partnership for Consumer Food Safety Education, [www.befoodsafe.ca](http://www.befoodsafe.ca)

# Who is responsible for food safety in Canada?

## ACHIEVING FOOD SAFETY

### INDUSTRY

- » Establishes and conducts food safety programs in accordance with regulatory requirements and industry practices
- » Verifies effectiveness of food safety systems and ensures safe production and distribution of food

### CONSUMER

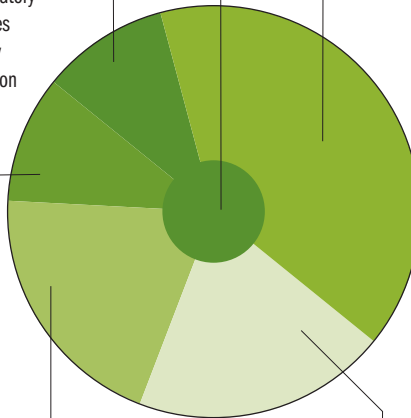
- » Clean, Washes hands with soap
- » Handles, prepares and cooks food safely
- » Consumes foods with caution

### LOCAL PUBLIC HEALTH / REGIONAL PUBLIC HEALTH AUTHORITIES

- » Inspect food establishments
- » Educate regarding food safety practices
- » Report confirmed cases of foodborne illnesses to province/territory
- » Investigate foodborne illness outbreaks; collect food samples; send samples to labs
- » Conduct analyses of findings

### PROVINCIAL / TERRITORIAL GOVERNMENTS

- » Regulate food processing within their jurisdiction
- » Implement food safety programs
- » Lead outbreak investigations within their jurisdiction
- » Communicate food safety messages to public



## FEDERAL GOVERNMENT

### CANADIAN FOOD INSPECTION AGENCY (CFIA)

- » Enforces all federal laws and regulations dealing with food
- » Ensures industry compliance with food safety regulations through inspection/compliance verification of food producers
- » Investigates food responsible for foodborne illness outbreaks with food safety partners
- » Initiates food recalls (with industry)

### HEALTH CANADA (HC)

- » Sets food safety standards/policies
- » Makes health risk assessment decisions re foods on market
- » Communicates to public on food safety issues

### PUBLIC HEALTH AGENCY OF CANADA (PHAC)

- » Acts as first point of contact for federal government for human health impact of foodborne outbreaks
- » Conducts public health surveillance
- » Leads epidemiological investigations when investigation is in more than one province

Some meat processors make products that are called ‘ready-to-eat,’ which simply means that generally you do not have to do anything else to the food before eating it, except maybe thawing or warming. Ready-to-eat meat products include: deli meat, pepperoni, bacon bits, liver pâté and dry salami.

## LOCAL AND/OR REGIONAL AUTHORITIES

The organization of food safety at the local or regional level varies significantly across provinces and territories in Canada. There are regional health authorities in Western Canada and the Atlantic provinces, local public health units in Ontario, and health and social service regions and municipalities in Quebec.

Regardless of the organizational set-up, local and regional authorities contribute to food safety by inspecting local food processors, and food service and food retail establishments that are not federally registered. Some health authorities provide food handler training and information to increase awareness among consumers of safe food handling, preparation, storage, and serving methods. Local/regional



“We need better coordination and cooperation in food safety activities amongst the various jurisdictions...

Discussions should continue with the federal, provincial and territorial committee in developing an outcome based meat safety system with recognition of provincial program like Ontario's HACCP Advantage program. And, last, food safety is a journey. It is not a destination.”

» RON USBORNE  
MEMBER OF THE CFIA'S ACADEMIC ADVISORY PANEL  
FOOD SAFETY AND QUALITY SYSTEMS SPECIALIST  
APPEARING BEFORE THE AGRICULTURE SUB-COMMITTEE ON FOOD SAFETY, APRIL 29, 2009

public health authorities also conduct surveillance of foodborne illnesses and report confirmed cases to provincial ministries of health. Finally, local/regional public health officials carry out epidemiological investigations, if a foodborne illness outbreak is suspected or confirmed.

## PROVINCIAL AND TERRITORIAL GOVERNMENTS

Provincial and territorial governments set food safety standards for plants licensed in their jurisdiction and enact and enforce food safety laws that apply to food produced and distributed within their jurisdiction. They also have the authority to investigate and take action to control human illness outbreaks, including foodborne illness outbreaks, within their borders.

## FEDERAL GOVERNMENT

Responsibility for food safety within the federal government is assigned primarily to three organizations: Health Canada, the Canadian Food Inspection Agency (CFIA) and the Public Health Agency of Canada (PHAC). A fourth

organisation, Agriculture and Agri-Foods Canada, supports food safety policies through food quality research.

Health Canada establishes policies and standards for the safety and nutritional quality of food sold in Canada. Food policy decisions are based on assessments of risks associated with products or processes from a public health perspective. In some situations, when an unacceptable risk is identified, the product or process may be prohibited. Health Canada is also responsible for assessing the effectiveness of the CFIA's food safety activities.

The Canadian Food Inspection Agency's main role is to enforce the food safety and nutritional quality standards set out by Health Canada for domestic and imported products. The Agency delivers inspection programs in food safety and quality, and plant and animal health across Canada, including food processing plants. It also ensures that all food products meet federal packaging and labelling requirements. The Agency takes enforcement action when food

safety standards are not met or when health risks are identified. When public safety is threatened, it conducts food investigations and product recalls. In carrying out this role and in fulfilling its responsibility for all federal food inspection activities, CFIA's objective is to ensure the safety of Canada's food supply.

The Public Health Agency of Canada plays an active role once an illness caused by food is detected in humans. PHAC supports action in preventing injury and disease across the country, including diseases transmitted by food or animals (foodborne and zoonotic<sup>2</sup>) and to promote national and international public health.

In a foodborne illness outbreak, PHAC conducts national public health surveillance and may provide assistance to provincial authorities by contributing to epidemiological studies. PHAC's laboratories provide reference services<sup>3</sup> to identify and differentiate the various types of micro-organisms involved in the illness as well as systems to assist surveillance and sharing of information. PHAC maintains national databases for all foodborne diseases, and operates the Listeriosis Reference Service, jointly with Health Canada.<sup>4</sup>

<sup>2</sup> The umbrella term describing diseases that can be passed to humans from animals.

<sup>3</sup> Laboratory reference services provide the national expert advice on a particular scientific issue.

<sup>4</sup> Lessons Learned: Public Health Agency of Canada's Response to the 2008 Listeriosis Outbreak

# Understanding the federal regulatory system overseeing meat processors

## CANADA'S 2007 FOOD AND CONSUMER SAFETY ACTION PLAN

In December 2007, Prime Minister Harper announced “Canada’s Food and Consumer Safety Action Plan.”<sup>5</sup> The Plan is designed to strengthen food,

<sup>5</sup> Health Canada, *Strengthening and Modernizing Canada’s Safety for Food, Health and Consumer Products: A Discussion Paper on Canada’s Food and Safety Action Plan*, (10 January 2008), online [http://www.healthycanadians.ca/pr-rp/dpaper-papier\\_e.html#a](http://www.healthycanadians.ca/pr-rp/dpaper-papier_e.html#a)

health and consumer product safety by better supporting the collective responsibilities of government, industry and consumers for product safety.<sup>6</sup>

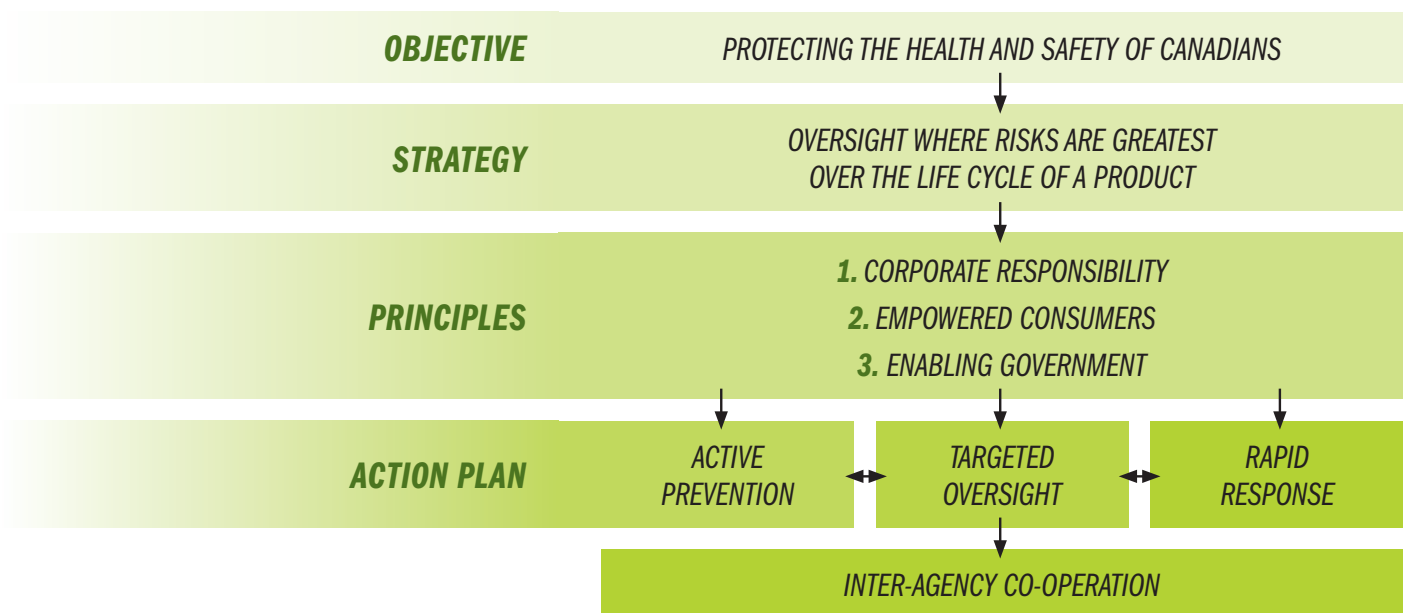
The Action Plan is based on the understanding that modernizing our food safety system demands an integrated approach, new and better information on food risks in the Canadian marketplace, and the full involvement of industry and Canadians in responding to potential hazards.

The Action Plan includes both legislative amendments to the *Food and Drugs Act* to replace outdated statutes and expanded program measures to

<sup>6</sup> *Public Health Law & Policy in Canada*, Second Edition, Bailey, Caulfield, Ries, Chapter 12, Foodborne Illness and Public Health (Ronald L. Doering), Ottawa, p. 492.

enhance Canada’s food safety system. The proposed changes to the *Food and Drugs Act* would help streamline the food safety system, provide more consistent regulatory tools across all food sectors and better enable the Government of Canada to fulfill its food safety mandate.

## FRAMEWORK FOR CANADA’S FOOD AND CONSUMER SAFETY ACTION PLAN



## Brief History

The Government of Canada has a long history of regulating the food industry with some federal laws dating back over 100 years. Prior to 1997 five federal departments were involved in delivering the federal food safety mandate. Health Canada had overall responsibility for health, safety and nutritional aspects of food. Agriculture and Agri-Food Canada and Fisheries and Oceans Canada regulated and inspected the agri-food and fisheries sectors. Industry Canada was responsible for the general food labelling provisions (applied to all pre-packaged food) and Revenue Canada-Customs played a significant supporting role by notifying federal departments of shipments and enforcing import regulations at ports of entry.

Governance changes were introduced following the Nielsen Task Force report in 1985. While some regulations governing food safety/inspection were amended, a priority was placed on clarifying roles and responsibilities and increasing co-operation and co-ordination of the federal food inspection and emergency response activities. The purpose was to introduce more uniformity in the delivery of inspection services and address provincial and industry concerns for uniform national standards as well as public concerns about food safety.

In 1994 a Report to Parliament by the Auditor General reported on the limited progress made by the government. The government had begun the planned reforms but attempts to facilitate a more uniform and consistent approach to safety and

quality standards and risk-based inspection had not been fully achieved.

In 1995, the Office of Food Inspection Systems was established to review and recommend the potential improvements to the federal component of the Canadian food inspection system, including possible changes to the organizational structure.

In 1997 the Canadian Food Inspection Agency (CFIA) was created by combining the food safety and inspection programs of three federal departments: Agriculture and Agri-Food Canada, Health Canada, and Fisheries and Oceans. The Agency's creation was to address a long history of needed reforms to the federal food safety/inspection system.

## OVERVIEW OF LEGISLATIVE FRAMEWORK

All meat processing companies that distribute and sell their products in more than one province and/or in other countries are governed by rules and requirements set out by the Government of Canada<sup>7</sup>. The rules cover food safety, quality, ingredients, packaging and labelling. These rules and requirements are found in several federal laws, mainly the *Food and Drugs Act* and the *Meat Inspection Act*.

Under the *Food and Drugs Act*, Health Canada sets out food safety standards, including the types of ingredients, that apply to all food

sold or imported for sale in Canada. Under the *Meat Inspection Act*, the CFIA establishes the quality, packaging and labelling standards for companies selling in more than one province or

exporting to other countries, as well as for companies importing food to be sold in Canada. The CFIA is the federal organization responsible for verifying that all the rules and requirements are

## Hazard Analysis and Critical Control Point (HACCP)

- HACCP was developed in the late 1960s at the request of the US National Aeronautics and Space Administration (NASA) to reduce the likelihood of foodborne illness while travelling in space.
- Today, it is an internationally endorsed food safety approach to assessing and controlling the hazards and risks associated with any food operation.
- HACCP systems have 2 parts:
  - » Prerequisite Programs: steps or procedures to control the operational conditions (e.g.: design of the machines, cleaning and sanitation, the building, employee cleanliness and training, transportation, recall procedures, etc) of the food processing plant. They include the conditions needed to produce safe food.
  - » HACCP Plan: a document detailing all the control points of hazard (i.e.: dangers) that are critical from a food safety perspective and specific to the processes and plant for which the plan is developed.

<sup>7</sup> Food processors that sell locally or within a province are governed by the rules of that particular jurisdiction.

## Compliance Verification System (CVS)

- CFIA designed the CVS by consolidating all the inspection requirements that previously existed in different meat inspection programs.
- The CVS sets out the procedures to be used by CFIA inspectors to verify the design and implementation of a plant's food safety plan and how the plan is being kept up to date.
- One the key goals of the CVS is to improve the efficiency and consistency of inspections.
- The CVS was piloted in 2006 and 2007 in over a 100 processing plants across the country before being implemented, in April 2008, in all federally registered meat, poultry and storage plants.
- The CVS consists of a series of verification tasks to be completed by the inspector, based on procedures to be followed when conducting verifications.

respected by companies under both laws.

The way the federal government fulfills these duties has changed in recent years.

### FEDERAL RULES AND REQUIREMENTS

The CFIA Meat inspection regulations flow from the *Meat Inspection Act*. The regulations require meat processing companies that sell products in more than one province or to other countries to be federally registered and licensed. Licensed operators, such as Maple Leaf Foods, must establish safety measures and controls at every step of the food production process in order to comply with the regulations.

### FOOD PROCESSORS

Food processors are required by regulations to develop their own food

safety plan, which includes a key component called the “Hazard Analysis and Critical Control Point” (HACCP) plan. The HACCP plan for each plant must be endorsed by CFIA. This systematic preventive approach (see box) to food safety is now considered the universal standard.

HACCP has been approved by the Codex Alimentarius Commission, the global body established by the Food and Agriculture Organization<sup>8</sup> of the United Nations and the World Health Organization. The Commission oversees food standards, guidelines and codes of practice under the Joint Food and Agriculture Organization / World Health Organization Food Standards Programme, which aims to protect

consumers' health and ensure fair trade practices in the food trade.

Food processors that want to market their food inter-provincially and/or internationally must implement, at minimum, HACCP plans in order to export their products. Each individual plant's food safety plan must cover all aspects of food safety including safety standards in the building where the food is produced, the land surrounding it as well as the equipment used in food preparation and packaging. The plan also outlines safety procedures for people working at the facility and their movements within the plant.

Microbiologists employed by each food processor do all the swabbing of equipment and scientific testing to detect bacteria according to the standards laid out in the plant's food safety plan. Food processors also have quality assurance officers who do internal verifications such as making sure that temperature controls are precise, charts are kept up to date, and so on. There are a minimum of three people per quality assurance team: one person undertakes the activity; a second person monitors the activity; and, a third person verifies the activity.

<sup>8</sup> Codex Alimentarius Commission, online [http://www.codexalimentarius.net/web/index\\_en.jsp](http://www.codexalimentarius.net/web/index_en.jsp)

## Voluntary vs. Mandatory Food Recall

### VOLUNTARY RECALL

- In Canada and in all other countries, food processing companies have the legal obligation to ensure that the products that they offer for sale on the marketplace are safe and fit for human consumption.
- If a product on the marketplace is found to be contaminated, the vast majority of companies “voluntarily” recall their product and physically remove or have it removed from the marketplace.
- In these cases, CFIA with the support of HC ensures that the actions taken by the company are appropriate in order to deal with the risk to the health of the public.
  - » Note: In some cases, provincial/territorial governments can undertake the roles described above for products sold in their jurisdiction.

### MANDATORY RECALL

- In exceptional cases, upon the recommendation of CFIA, the Minister of Agriculture and Agri-Food has the power under the *Canadian Food Inspection Agency Act* to order a “Mandatory” recall:
  - » It is used when a company is unwilling or unable to recall its contaminated product or when the company can not be found (e.g.:bankruptcy) or identified;
  - » A mandatory recall is significantly more challenging as it takes additional time to locate and remove the product from the market (product and distribution information is not available since the company is not cooperating);
  - » CFIA staff is required to remove the product from the market in addition to its regular recall duties.

## CANADIAN FOOD INSPECTION AGENCY

In addition to industry’s in-house food safety plans and controls, the CFIA conducts inspections at food processing plants to ensure food processors respect federal laws and regulations.

These inspections include an assessment of the plant’s HACCP plans which must be endorsed by CFIA. With the introduction in April 2008 of the Compliance Verification System (CVS), CFIA inspectors are required to conduct specific inspection activities

at registered federal meat plants each day. These inspections activities, include daily and monthly tasks, and are based on known risks associated with food processing and the facility.

With the introduction of the CVS (see box), CFIA inspectors are to audit the plant’s key control systems within

### Suggestion

“Health care institutions should follow the federal Policy on Listeria, in particular the recommendations regarding ready-to-eat meats and vulnerable populations.”

» A SUGGESTION BY A FAMILY AFFECTED BY THE OUTBREAK

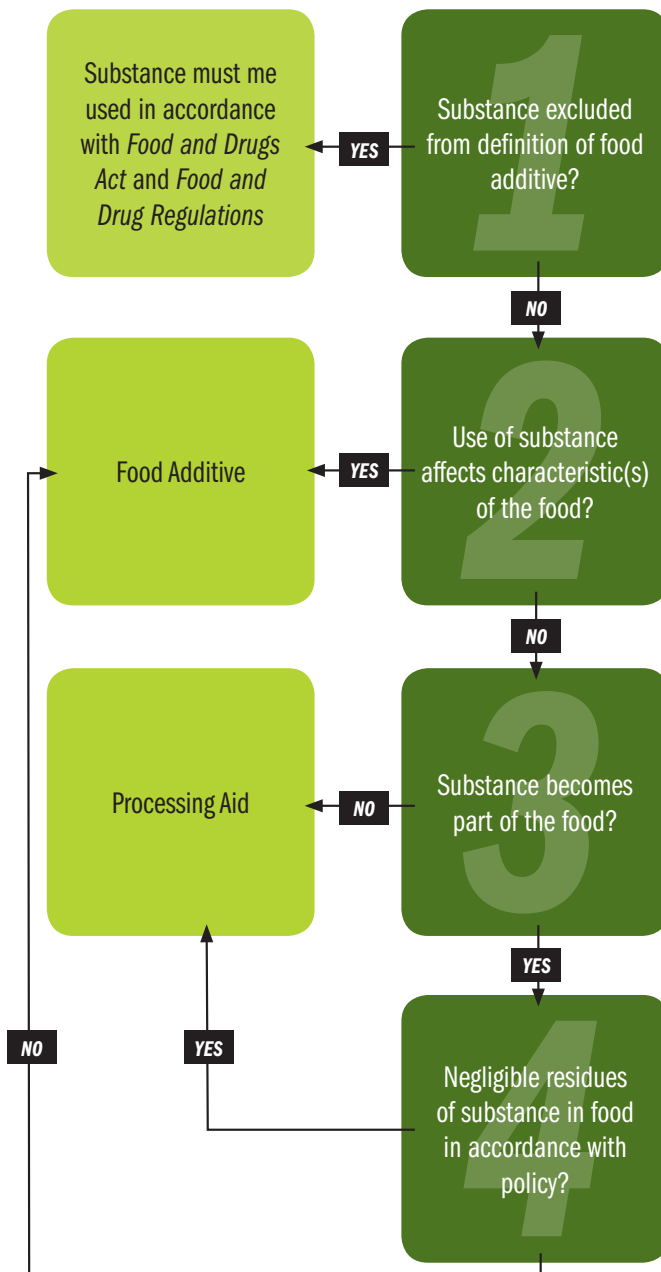
a two-year period, in addition to their daily inspections.

Aside from its inspection powers the CFIA, under the authority of the *Food and Drugs Act* and the *Canadian Food Inspection Agency Act*, can remove products from the market when a suspected contaminated food poses a risk to public health and safety. Such intervention can take place whether the product has been produced in a federally registered or provincially (territorially) licensed plant, or imported for sale into Canada. The CFIA has broad powers to investigate, search, seize and hold food products that violate the *Food and Drugs Act*. An inspector can enter any food processing facility or vehicle and open any package that is suspected of containing a contaminated product.<sup>9</sup>

The Canadian Food Inspection Agency warns the public when a specific food has been identified as a risk to human health and can order a company to recall particular products. Recalls are almost always done voluntarily by the responsible food processor. In the past 12 years since the CFIA was created, the Agency has conducted several thousand investigations that concluded in an average of 235 primary recalls per year in recent years. Of all the recalls since 1997, only seven were mandatory.

<sup>9</sup> *Public Health Law & Policy in Canada*, Second Edition, Bailey, Caulfield, Ries, Chapter 12, Foodborne Illness and Public Health (Ronald L. Doering), Ottawa, p. 489.

## DECISION TREE TO IDENTIFY FOOD ADDITIVES AND PROCESSING AIDS



## LISTERIA POLICY

In 2004, Health Canada, in collaboration with the CFIA, updated and implemented the federal *Listeria* policy<sup>10</sup>. The current policy is based on the principles of HACCP and an approach that assesses the risks of contaminated foods to human health. It includes a combination of inspection, environmental sampling and end product testing.

The 2004 Policy focuses on ready-to-eat foods which have been linked to outbreaks of listeriosis and those that support growth of *Listeria monocytogenes* with a greater than 10-day refrigerated shelf-life. It recognizes that the risk of contamination by *Listeria monocytogenes* can be reduced, but that *Listeria* cannot always be eradicated from finished products or the food processing plant environment.

The 2004 Policy guides food processors on food safety standards and risk management approaches to controlling *Listeria monocytogenes*, including effective sanitation programs to address *Listeria monocytogenes* in the environment of their plant.

In addition, the Policy sets out food processors' responsibility with respect to the development of sampling approaches and the use

<sup>10</sup> The 'Policy on *Listeria monocytogenes* in ready-to-eat foods' replaced the 1994 Field Compliance Guide.



of microbiological testing to verify that their control measures, eg. sanitation, are working as intended.

## FOOD ADDITIVES AND TECHNOLOGIES

In Canada, the *Food and Drugs Act* governs the use of all substances in food processing and manufacture. Under the Act, the *Food and Drug Regulations* permit the use of additives which can be used to preserve food or to control harmful bacteria. The regulatory definition of food additive includes 'any substance the use of which results, or may reasonably be expected to result, in it or its by-products becoming a part of or affecting the characteristics of a food.'<sup>11</sup> Regulations can include a list of foods in which the additive may be used and their level of use, as well as a requirement that the additive be declared on the label of a prepackaged food.

There are other substances used during food processing and manufacture that do not meet the definition of food additive, which are commonly referred to as food 'processing aids.' These include chemicals and treatments, such as some antimicrobial substances, antifoaming agents, filtration and fining agents. Use of processing aids does not affect the natural characteristics of the food and

results in no or negligible residues of the substance or its by-products in or on the finished food.

## ADDITIVES THAT CAN INHIBIT *Listeria* GROWTH

Additives such as sodium diacetate and sodium lactate have been approved for use in the United States for close to a decade to inhibit *Listeria* growth. The two chemicals have been used singly or in combination by American food processing companies. They are also used in other jurisdictions, including the UK, the EU, Australia and New Zealand, and have proven safe and effective in controlling the

### Post-Pasteurization

Post-packaging heat treatments (typically referred to as post-pasteurization) have long been used for whole muscle products that are unavoidably handled after initial thermal processing (Beckwith, 1995).

proliferation of *Listeria* bacteria.

These additives are endorsed by industry associations including the Canadian Meat Council and the American Meat Institute and international bodies such as the Codex Alimentarius as successful ways to inhibit *Listeria* growth. Both chemicals were approved by Health Canada in the fall of 2008 on an interim basis but new regulations have yet to be finalized.

## POST-PROCESSING BACTERIA 'KILL STEPS'

While some processes are used during the stage when food is being processed, others are used in the period before or during packaging. These activities are clustered under the general category of post-processing bacteria 'kill steps' such as:

- » Heat and UHP (ultra high pressure): These procedures to kill *Listeria* include heating, steam, submersion in hot water, radiant oven heat, high pressure processing, consumer reheating;
- » Post-processing, post-pasteurization or post-lethality alternatives: These are physical treatments such as chemical antimicrobials: biological: lactic acid bacteria, bacteriocins/ bacteriophages that can destroy the bacteria;
- » Irradiation: Food irradiation is a safe method to decontaminate foods for human consumption, although it is controversial with consumers. It has been proven to be the single most effective methods of eradicating bacteria, and it does not alter appearance, taste or texture of foods. Despite its many advantages, this proven technique is unlikely to be adopted by food processors without a major consumer education program.

<sup>11</sup> From HC Website: [http://www.hc-sc.gc.ca/fn-an/pubs/policy\\_fa-pa-eng.php](http://www.hc-sc.gc.ca/fn-an/pubs/policy_fa-pa-eng.php)

## Public Health Core Functions in Canada

The following six activities are generally considered to be the “core public health functions” in Canada:

- **Health Surveillance:** On-going, systematic collection, analysis and sharing of high quality health data, in a timely manner, in order to forecast and respond to new and emerging health challenges
- **Population Health Assessment:** Understanding the health status of communities or populations and the factors that foster good health or that may cause ill-health.
- **Health Protection:** Actions to ensure safe water, food and air, including the control of infectious diseases, protecting the population from environmental threats and providing advice to food and drug regulators.
- **Disease and Injury Prevention:** Policies and programs to promote safe and healthy lifestyles to reduce illness and prevent injuries. Includes investigating disease and preventive measures to reduce the risk of infectious diseases and outbreaks.
- **Health Promotion:** Public policies and programs (e.g., community-based, advocacy, active public participation etc) to improve the prospects of safe behavior and healthy lifestyles and address the broader determinants of health.
- **Emergency Preparedness and Response:** Planning and preparation to help protect the population from both natural and man-made disasters to reduce or prevent serious illness, fatalities and social disruption.

### EMERGING TECHNOLOGIES

**Bio-sensors:** These highly sophisticated devices can detect minute changes to reveal the presence and concentration of contaminants in food. Because bio-sensors can reveal even very small amounts of contamination, they hold promise for enhancing food safety in the future. However, these technologies are still in the developmental phase and are not yet in use in the food processing industry.

### SANITIZERS USED TO CONTROL *LISTERIA*

The *Listeria* bacteria have the ability to form bio-films – microorganisms that adhere to surfaces – that are resistant to conventional industrial cleaning methods. Recognizing this, a number of meat processing industries in North America, including Canada

and the United States, as well as in the European Union, the United Kingdom, Australia and New Zealand use sanitizers to control *Listeria* in their manufacturing processes.

The meat industry uses four main types of sanitizers: hot water, chlorine, iodophors and quaternary ammonia. Sanitizers approved for use in meat production facilities combine both products and sanitation techniques to eradicate *Listeria* bacteria that are harmful to humans.

Several of these sanitizers (quaternary ammonia and iodophors) are most effective when combined with post-processing steam and heat treatments.

The introduction of sanitizers has made a noticeable difference in the incidence of *Listeria* contamination in ready-to-eat foods in the US. Listeriosis

cases have declined there by as much as 40% since the late 1990's, when these new sanitizing procedures were encouraged in the aftermath of a serious listeriosis outbreak in that country. This approach has had the greatest impact in reducing the number of pathogens in ready-to-eat poultry and red meat products.

### DESIGN OF FOOD PROCESSING EQUIPMENT

All food processing plants are comprised of numerous pieces of equipment. The design of this equipment can facilitate, or complicate, the sanitation measures needed to produce safe foods.

Specific direction on sanitation and other maintenance guidance that affect food safety is provided through directives issued periodically by CFIA.



## PulseNet Canada

- PulseNet was initially developed Centers for Disease Control and Prevention (CDC) in Atlanta, United States and currently operates virtually worldwide
- PulseNet Canada set up in 2000 is a national electronic network, coordinated by PHAC, that provides a rapid communications platform and links public health laboratories from all provinces and Health Canada
- PulseNet contains information on foodborne illness and their causes, used in helping identify outbreaks in real time once the necessary data is inputted
- PulseNet can track cases of *E. coli*, *Salmonella*, *Shigella* and *Listeria monocytogenes*

## What is surveillance?

The ongoing, systematic collection, analysis and sharing of high quality health data, in a timely matter, in order to forecast and respond to new and emerging health challenges

Food processing equipment, including slicers that can affect the safety of food, is part of each plant's food safety plan approved by government.

## Understanding public health and the organizations involved

Public health involves much more than hospitals and doctors – what most Canadians think of as the health care system.

Public health covers a wide range of disciplines. Unlike the health care system which treats each patient individually, public health practitioners are concerned with the health of the entire population.

The Public Health Agency of Canada was established in 2004 in response to growing concerns about the capacity of Canada's public health system to anticipate and respond effectively to public health threats, including foodborne illnesses. The Agency's creation followed recommendations

from leading public health experts who called for clear federal leadership on public health matters and improved collaboration within and between jurisdictions.

The PHAC describes public health as "a shared responsibility. While governments enact laws, develop policies and provide resources to fund public health activities, it takes the combined efforts of a variety of organizations, sectors, and people, both within and outside government, to address health challenges."<sup>12</sup>

In the event of foodborne illnesses, provincial or territorial officials generally have the mandate to investigate human illness outbreaks that occur within their own borders.

The federal government delivers health care services to First Nations and Inuit populations, as well as war

and Canadian Forces veterans. It also provides funding to provincial and territorial health systems. A further function of Health Canada and the Public Health Agency of Canada is to conduct scientific research, carry out consultations with Canadians to determine how to best meet their long-term health needs, communicate information about disease prevention to protect Canadians from avoidable risks and encourage Canadians to take an active role in their health<sup>13</sup>.

The sharing of these responsibilities is laid out in Canada's Constitution.

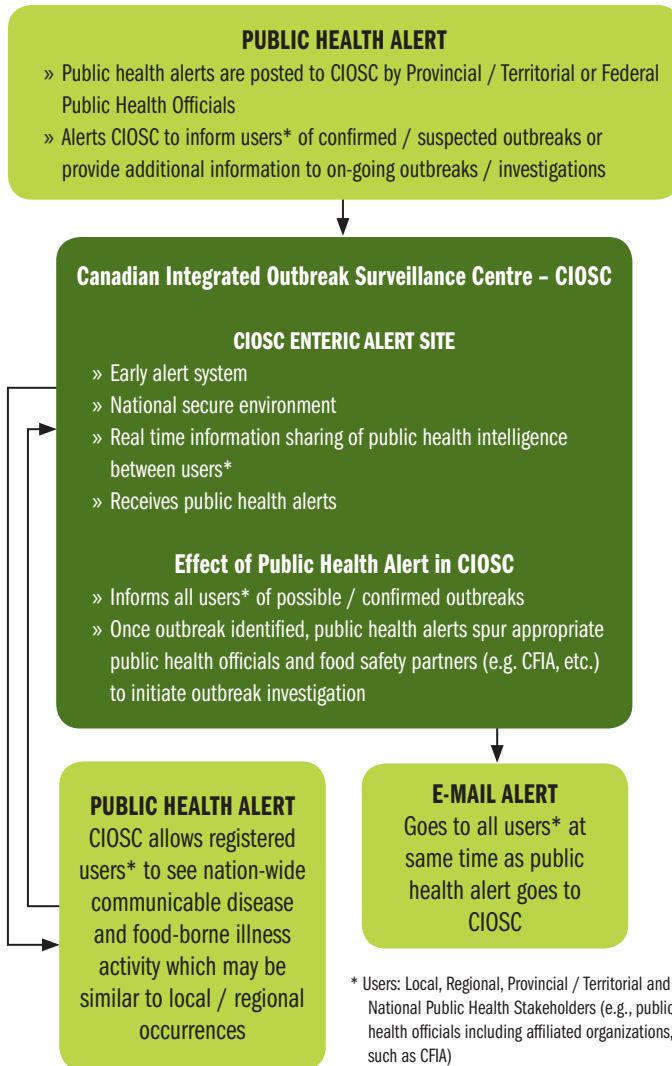
<sup>12</sup> Public Health Agency of Canada, Report on the State of Public Health in Canada 2008, *What we mean by public health*, online <http://www.phac-aspc.gc.ca/publicat/2008/cpho-aspc/cpho-aspc02-eng.php>

<sup>13</sup> Drawn from HC website <http://www.hc-sc.gc.ca/ahc-asc/index-eng.php> and "The Government of Canada's role in health" <http://www.hc-sc.gc.ca/hcs-sss/pubs/system-regime/2002-fed-comp-indicat/2002-health-sante4-eng.php>

# Detecting and investigating foodborne illness

## CANADIAN INTEGRATED OUTBREAK SURVEILLANCE CENTRE – CIOSC

**Objective: Outbreak Surveillance (Early Detection of Outbreak)**



## SURVEILLANCE OF FOODBORNE ILLNESS

The routine monitoring of important conditions and diseases, including foodborne illness, carried out by public health, is called surveillance. This is one of the six core functions of public health. The purpose of surveillance in foodborne illnesses is to prevent the spread of infection to susceptible people. Surveillance is carried out by all three levels of government.

Most cases of foodborne illness are not part of recognized outbreaks but occur as individual or ‘sporadic’ cases. However, some may be part of unrecognized outbreaks. As the 2008 listeriosis outbreak demonstrates, detecting large outbreaks can be a challenge especially where illness occurs across large geographic areas and local jurisdictions may see only one or two cases. That is where laboratory tools for DNA fingerprinting of disease organisms (described later) are valuable in making connections between cases and in linking them to a specific food or other source.

Certain diseases have been made “notifiable”, meaning that when they are diagnosed they must be reported to public health authorities. Surveillance

## Epidemiological investigation

An epidemiological investigation aims to identify common links between illnesses in the general population in order to determine the source of the illness and the means of exposure and transmission.

This type of investigation is commonly used to identify the source of communicable and foodborne illnesses. In the latter case, the investigation searches for the specific food which is the causal agent.

## Dr. Horacio Arruda

“Epidemiological information is to a public health physician what CAT scans are to other physicians.”

» DR. HORACIO ARRUDA  
DIRECTOR OF HEALTH PROTECTION, MINISTRY  
OF HEALTH AND SOCIAL SERVICES OF QUEBEC

of a notifiable foodborne illness usually begins with a report to local public health by a physician who has made the diagnosis or by the laboratory that detected a positive lab specimen. The patient information is recorded in an electronic surveillance system which is uploaded into a provincial information system. If the disease is nationally notifiable, information is also transferred to the Public Health Agency of Canada.

In 2008, listeriosis was a notifiable disease in most but not all Canadian provinces. However, it was not nationally notifiable<sup>14</sup>. The list of notifiable diseases at the federal level is agreed to by consensus with the provinces and territories, as they must supply the reports. Since the 2008 outbreak, the process to add listeriosis to the list of notifiable diseases has been undertaken by all jurisdictions.

Public health officials monitor the illness reports they receive to look for increased numbers of cases or clusters that could indicate an emerging problem. The systems that

monitor notifiable illnesses vary from province to province. Many systems monitor illnesses and identify spikes in the number of cases. If the number increases, provincial/territorial public health officials may alert all local and regional health units, as well as those in other jurisdictions, to enhance surveillance which may lead to preventative measures.

The Public Health Agency of Canada has several national surveillance systems in place for foodborne illness. The National Enteric Surveillance Program<sup>15</sup> is designed to provide timely analysis and reporting of lab-confirmed enteric (intestinal) disease cases in Canada. Their National Microbiology Lab coordinates PulseNet Canada, an electronic laboratory network that identifies clusters of foodborne pathogens including *Listeria monocytogenes* based on their DNA fingerprints. PulseNet allows DNA fingerprints to be compared in real time so that foodborne illness from a common source can be identified.

<sup>15</sup> National Surveillance Enteric Program includes C-EnterNet as a pilot initiative to obtain more complete information on enteric disease by conducting surveillance in selected sentinel sites

Another national initiative, the Canadian Integrated Outbreak Surveillance Centre (CIOSC)<sup>16</sup> plays a key role in detecting disease outbreaks by receiving, posting and distributing electronic alerts about respiratory or enteric diseases to public health practitioners across Canada and related organizations like CFIA. This encourages others to look for similar cases that might be connected. CIOSC alerts may be initiated at any level of the public health system and are not restricted to notifiable diseases.

## Investigating foodborne illness

When an apparent cluster of cases is detected, public health officials first determine whether the cases represent a real increase above the expected number of cases and whether they really might be related. Once an outbreak is strongly suspected, an investigation begins.

Typical steps in an investigation include:

- » search for more cases among people who might have been exposed

<sup>16</sup> CIOSC is operated by PHAC

<sup>14</sup> National Notifiable Diseases - [http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/list\\_e.html](http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/list_e.html)

## Foodborne Illness Outbreak Response Protocol (FIORP)

FIORP is a joint protocol to guide multi-jurisdictional responses when a foodborne illness emergency arises. The roles and responsibilities of all governments charged with investigating and managing such an outbreak are outlined.

It was first developed in 1999 by Health Canada and CFIA, in consultation with the provinces

and territories. In 2002, as part of a special session on Emergency Preparedness, the Federal/Provincial/Territorial (FPT) Committee on Food Safety Policy recognized the protocol as a key document to outline procedures for national emergency preparedness and agreed to work together to amend it to reflect the perspectives of public health officials from across the country.

Once that work was completed by an FPT Working Group, in 2004, the updated FIORP was endorsed by the FPT Committee on Food Safety Policy, the Council of Chief Medical Officers of Health and Federal, Provincial and Territorial Deputy Ministers of Health.

- » 'case definition' developed to describe typical cases
- » description of the outbreak - who is affected, graph of cases over time etc.
- » additional sampling as needed to determine the organism responsible
- » interviews to identify potential foods that might be implicated
- » formal epidemiological investigation to measure the association between the illness and the suspected source of food
- » investigation into the implicated food - its ingredients, preparation and microbiological culture of leftover ingredients or the food itself (if available)

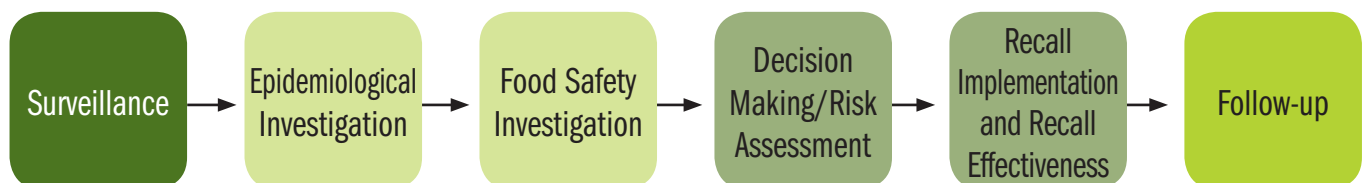
The epidemiological investigation often provides enough evidence to establish the source of the outbreak and how it is being spread. This allows appropriate control measures to be taken. In other circumstances additional laboratory studies (for example to link human illness and the implicated foods) are needed to provide the evidence needed for action.

When outbreaks of foodborne illness occur, epidemiological investigations are handled by the local/regional public health departments, a province or territory or the federal government, depending on the scope of the illness or the capacity to manage the investigation. The Public Health Agency of Canada becomes involved when

provincial or territorial government requests assistance or once an illness extends beyond a single province or territory.

When commercial food products are implicated, provincial Ministries of Agriculture and/or the CFIA also become involved to conduct a detailed food safety investigation to identify the food responsible for causing the illness. This usually includes working closely with the manufacturer to obtain distribution records and additional food samples for testing, and conducting a comprehensive inspection of the manufacturing facility.

Provinces and territories also have the authority to investigate food safety issues and provide notification to the



**Determining and Responding to a Foodborne Illness Outbreak** (From Lessons Learned: The Canadian Food Inspection Agency's Recall Response to the 2008 Listeriosis Outbreak, p8)

public concerning food safety and conduct recalls within their boundaries if the plant is provincially registered. For instance, the Ontario Ministry of Health and Long-Term Care can issue a food recall of unfit food under the Ontario *Health Protection and Promotion Act*.

At the federal level food safety investigations are the responsibility of CFIA, and carried out in collaboration with Health Canada. Each year, the CFIA conducts approximately 3000 food safety investigations. These investigations can be triggered by various sources including consumer and industry complaints, inspections, audits, laboratory results or referral from other organizations. As a result of these investigations, approximately 235 primary food recalls are initiated each year to remove products from the market, in most cases before products are consumed.

Key CFIA staff, including those from the national Office of Food Safety and Recall, Area Recall Coordinators and laboratory services, are involved in such food safety investigations. Health Canada's role is to conduct, at the request of CFIA, an assessment of the health risks from human exposure to contaminated foods.

Coordination of the response to large national outbreaks of foodborne disease is unusually complex because there are many organizations involved at three levels of government. The roles and responsibilities of all governments charged with investigating a foodborne illness outbreak are outlined in the

*Foodborne Illness Outbreak Response Protocol to Guide a Multi-Jurisdictional Response (FIORP)*. This protocol has been ratified in 2004 by Deputy Ministers for all fourteen jurisdictions.

Aside from this national-level protocol involving federal, provincial and territorial governments, a number of provinces and territories – British Columbia, Alberta, Saskatchewan, the Northwest Territories, Ontario and Quebec – have specific agreements with the federal government relating to food safety.

#### NEXT CHAPTER

“With the advantage of hindsight, it was possible to see the factors that created the conditions that allowed listeriosis to take hold. Coincidences and decisions, which were not thoroughly thought through or executed, contributed to the 2008 outbreak...”



# CHAPTER 5

## What led to the outbreak?

### What led to the outbreak?

With the advantage of hindsight, it is easy to see the mix of variables that created the conditions enabling listeriosis to take hold. Among the many variables, is simply the fact that the disease involves a virulent bug that is very difficult to pinpoint and even harder to keep in check. Beyond that, a number of coincidences as well as specific decisions, which were not thoroughly thought through or executed, may have contributed to the 2008 outbreak. Whatever the explanation, the reality is *Listeria* defeated the best efforts of all those trying to prevent it from entering the food supply, including workers attempting to control it in the Maple Leaf Bartor Road plant. It also evaded the oversight systems of both Maple Leaf Foods and the federal government (CFIA). As a result, a segment of the population that is the most vulnerable was exposed to its damaging and sometimes deadly effects.



Then, there is the fact that the food business has undergone a transformation in recent years, due in great part to new technologies and globalization. The way food is raised, processed, transported and distributed to consumers now means that food produced in one part of the country is available within days in communities big and small all across the country.

This ready access to a wide variety of foods, especially ready-to-eat products that are a growing staple in many Canadians' busy lives, is a bonus for both consumers and industry. However, each step in the modern food chain increases the chance of food contamination. It also makes tracing the source of a foodborne illness when an outbreak occurs far more difficult than in the past.

These conditions were affected by a series of modifications to federal food safety policies and programs that had been introduced by the CFIA in the lead-up to the event. These recent changes contributed to additional complication and confusion when it was finally obvious that a major listeriosis outbreak was underway. Many of the new initiatives were not well understood or only partially implemented, at the very time that clear communications, cooperation and coordinated action were required on the part of multiple players.

In addition, the fact that food safety and public health is shared among three levels of government, using different systems and procedures

and operating on different timetables made things even more complicated. These challenges were intensified by the time of year that the events took place – the summer vacation period. Senior management in several key organizations were on vacation, which may have contributed to delays in decision making in some situations.

In the end, the lost time made little difference because most of the contaminated food was on the market and eaten before people in the food safety and public health sectors were even aware of the outbreak's existence.

We identified weaknesses in four critical parts of the food safety system that, collectively, led to the *Listeria* outbreak.

## 1. MAPLE LEAF FOODS BELIEVED ITS PROCEDURE TO CONTROL *Listeria* WAS WORKING – IT WAS NOT

Like all firms operating food processing plants regulated by the federal government, Maple Leaf Foods was required to maintain a hygienic operating environment in order to control bacteria.

At the outset of the 2008 listeriosis outbreak, Maple Leaf Foods was viewed as a good company using the latest food safety control systems. It viewed itself then, and continues to view itself now, as a leader in the industry. The Bartor Road plant was considered by many to be a compliant

plant in that it routinely met all the regulatory requirements under the federal *Meat Inspection Act* and got satisfactory marks for complying with the government's inspection and testing tasks. When Canadian Food Inspection Agency's inspectors identified any compliance problems, the plant addressed them. Bartor Road's management maintained the necessary required records, ensured that staff training took place, and made sure its quality assurance program was completed.

Much of the credit for Maple Leaf Foods' good reputation rested with the firm's in-house safety plan. The company had introduced its own food safety procedures - which includes a comprehensive HACCP<sup>1</sup> plan, an additional layer of food safety protection at the end of the nineties – years earlier than was required by the regulations.

Like most food processors, Maple Leaf Foods' food safety approach laid out a hazard monitoring and control program. As a general rule, these plans are effective. Over 400 meat processing companies across the country produce tons of food products daily without incident.

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<sup>1</sup> The "Hazard Analysis and Critical Control Point" (HACCP) places the responsibility on the food producer to ensure that the product is safe to be consumed. Proposed by the Codex Alimentarius Commission for the food industry in general, and meat, poultry, and seafood industry in particular, it has been adopted by some 150 countries.

The food safety plan of Maple Leaf Foods covered all expected aspects, including safety standards in the building where the food is produced, the land surrounding it, as well as the equipment used in food preparation and packaging. The plan outlined safety procedures for people working at the facility and their movements within the plant. It also identified who is in charge of various aspects of the company's operations and the corresponding levels of responsibility and accountability.

Maple Leaf Foods was confident that its monitoring and control programs would find any problems if they arose and, for the most part, they did. The company had a good track record in preventing contamination in its products. *Listeria* did surface periodically. When test results from environmental testing<sup>2</sup> identified the presence of *Listeria*, plant employees took corrective actions such as increased sanitation.

At that time, while environmental testing for *Listeria* was not a requirement set out in the CFIA regulations, the company was following

<sup>2</sup> Environmental testing: a group of tests used to determine if food contact and non-contact surfaces, such as a slicer, equipment, refrigeration units or ceilings (over production lines) are *Listeria* free. Testing is conducted using a sterile cotton swab or a sponge wiped on a selected portion of each pre-determined surface. The swab/sponge is also known as a sample, and is then tested to see if any bacteria can be found.

Health Canada's *Listeria* Policy which recommends environmental testing. In fact, like many of Canada's ready-to-eat meat processing plants, Bartor Road actually went beyond the Policy and requirements in that the company had an extensive environmental testing program of its own.

Doing more than was required did not guarantee the company was trouble free. As early as summer and fall of 2007, the company's environmental testing program showed positive *Listeria* environmental test results from production lines 7 and 8 in the plant, every two to three weeks, at various locations on those lines.

This pattern carried on into 2008. For example, in the first week of February, the plant's environmental test results showed an increase in the number of positive *Listeria* results from line 7. The problem also occurred in March and April when increased numbers of positive *Listeria* test results showed up on line 8, every two to three weeks. During the week of May 19<sup>th</sup>, more positive test results appeared on the plant's lines 7 and 8.

With the benefit of hindsight, we now know that this problem persisted over several months before the June 3<sup>rd</sup> onset of the first case of human illness linked to contaminated Maple Leaf Foods deli meat products. Positive results for *Listeria* from environmental

### Incidence of food contamination

- There are few episodes of foodborne illness, particularly listeriosis, despite millions of meals a day of food products being packaged and shipped across Canada and around the world.
- The CFIA does approximately 3000 food investigations annually. In an average year, this results in 235 primary recalls.
- Occurrences of contaminated food reaching consumers and causing foodborne illness outbreaks account for only 5 to 6 cases per year.

testing were also identified during the week of June 23<sup>rd</sup>.

In each instance, the plant staff took action to destroy the bug. They employed a 'search and destroy' approach - the recognized standard procedure - sanitizing all the surfaces where the bacteria could grow on production lines and throughout the building. Every time employees intervened, the follow-up test results were negative, at least for awhile. This led to the assumption that the problem had been solved, creating a false sense of security.

What was missing was the big picture - recognizing the repeated pattern of presence of *Listeria* on the same production lines several weeks after the problem was presumed to have been fixed. Although data were being



collected to note such instances, they were not being analyzed by the plant or company headquarters to detect trends over time. Had such analyses been conducted, the re-emergence of *Listeria* on a regular basis would have become obvious much sooner.

Bartor Road staff treated these occurrences as isolated incidents. Since the positive results were never looked at together, no one identified the recurring pattern and *Listeria* continued to thrive in the plant. Because the original source of the bacteria was not recognized and treated, the underlying cause of the contamination was not addressed until after the outbreak.

Looking back, it becomes more apparent why these warning signs were missed.

The new federal food safety procedures, including HACCP, had only been mandatory since 2005. Bartor Road was one of the first in the country to adopt this approach in 1999, making it a flagship plant for Maple Leaf Foods.

Although these procedures are now recommended by the World Health Organization for food safety, they were and are still relatively new. Both employees' understanding, and the actual implementation of this approach, was still maturing in the spring and summer of 2008. We were told *Listeria* was not top of mind for many people working in Bartor Road. At the time, employees were likely more inclined to look for and eliminate

## Michael McCain

“It was a failure to analyze test data that we weren't even obligated to collect – a failure on our part to analyze that data and look for root-cause analysis, investigate and follow-up on individual trends, to look for patterns so that we could find the bacteria that we couldn't see inside these facilities, and end up with a different result.

It was more a failure to analyze those findings for a root cause, and a failure of those protocols, than it was a failure of inspection, per se.”

» MICHAEL MCCAIN, PRESIDENT AND CEO MAPLE LEAF FOODS INC. APPEARING BEFORE THE AGRICULTURE SUBCOMMITTEE ON FOOD SAFETY, APRIL 20, 2009

more frequently found bacteria such as *Salmonella* and *E. coli*.

We were told that during this period, Maple Leaf Foods was responding to a demand for large packages of deli meats. This market included hotels, restaurants, and institutions, such as long-term care homes and hospitals. There was a demand for these products in institutions, as they must offer choices to their residents/patients, and deli meat is a popular choice. To meet this increased demand, the company was operating the plant for long hours, running double shifts.

Between midnight and the morning shift, when the production lines were closed down, sanitation was being performed.

A further factor is the time required to disassemble the meat slicers and other production line equipment for a thorough cleaning and verification. While there was daily sanitation of all surfaces coming into contact with food, a complete cleaning of the entire plant only took place on the weekends and not every piece of equipment was fully dismantled. For example, we heard that to take the meat slicing machines

completely apart, thoroughly sanitize and then reassemble would have required shutting down the plant for three days. We also heard that it could take considerably less time.

## POST OUTBREAK REVIEW

Following the outbreak, both Maple Leaf Foods and the Canadian Food Inspection Agency completed detailed reviews to determine the cause of the *Listeria* contamination within the Bartor Road plant.

Maple Leaf Foods convened a panel of international food safety experts in late August 2008 to investigate the source of the *Listeria* bacteria. The Expert Panel identified deficiencies in the company's physical, operational, sanitation, environmental, and contact-point testing. The experts concluded that the most probable cause of the outbreak was contamination of deli meat products by commercial meat slicers used on production lines 8 and 9 in the plant. The Panel determined that the meat slicers had meat residue deep inside the slicing mechanisms, which provided a breeding ground where *Listeria* could

“Ironically, *Listeria* is sometimes described as a bug of clean plants because some believe that intense sanitizing kills off the bacteria’s natural predators. This belief, however, has not been demonstrated to be true and contributes to ineffective *Listeria* control procedures.”

» DR. BRUCE TOMPKIN, MEMBER OF THE US NATIONAL ADVISORY COMMITTEE ON MICROBIOLOGICAL CRITERIA FOR FOODS FOR 10 YEARS AND THE INTERNATIONAL COMMISSION MICROBIOLOGICAL SPECIFICATIONS FOR FOODS FOR 20 YEARS, MEMBER OF THE LISTERIOSIS INVESTIGATION EXPERT ADVISORY GROUP

grow. Several pieces of equipment, including cutters and slicers, were eventually replaced.

We were informed by the manufacturer that two of the slicers were relocated to the Saskatoon Maple Leaf Foods plant in late fall 2008. This information was confirmed by the CFIA. Before going back to production the slicers were completely disassembled, fully sanitized, rebuilt, and verified by the manufacturer for their new intended use. The slicers are currently in use to slice “casing” type products.<sup>3</sup> Extra sanitation measures have been implemented by the operator, in addition to having enhanced environmental testing conducted on the equipment both on food contact surfaces and non-food ones.

The CFIA also conducted an In-depth Review using its food safety experts in early September 2008 that corroborated many of the findings of the Expert Panel. This review shed new light

<sup>3</sup> “Casing” type products are various food products which are cooked in an envelop (casing) before being sliced (such as mock chicken, bologna, pepperoni, salami, and summer sausage).

on additional factors that contributed to the contamination. The In-depth Review found that the Maple Leaf Foods instructions for equipment maintenance were insufficient. It noted potential cross-contamination as employees moved from one room to another. The Review also cited structural damage and maintenance issues in rooms where ready-to-eat meats were handled. As well, it highlighted several biological, chemical, and physical risks that were not incorporated into the company’s food safety plan.

While there is not conclusive evidence that it played any role, it appears that construction work that took place at the Bartor Road plant a few months earlier, in the spring of 2008, could have added to these problems. The construction may have exposed the plant to moisture and could have also allowed *Listeria* to enter the facility, making sanitation control more difficult. *Listeria* thrives in moist conditions.

Taken together, these challenges and deficiencies meant that opportunities to prevent *Listeria* contamination of products at the Maple Leaf plant were missed.

## FOOD SAFETY PRACTICES AT MAPLE LEAF FOODS

Something else that has since been confirmed by Maple Leaf Foods and the CFIA is that knowledge of the presence of *Listeria*, and their actions to control it, were not disclosed by Maple Leaf Foods to the CFIA inspection staff (not a regulatory requirement).

The CFIA inspectors did not ask specifically for this information and plant employees did not volunteer it. Maple Leaf Foods employees notified their superiors beyond Bartor Road into the Head Office, but this information did not reach the office of the Chief Executive Officer.

Equally noteworthy the company had invested in a specific *Listeria* environmental testing program (environmental results data software, compilation reports, remedial action plans), but this was not effectively implemented. Staff at the plant level did not look at the overall testing results to identify patterns that might indicate emerging problems. Further, we were told that corporate quality assurance officials did not conduct sporadic spot checks or undertake trend analyses.

Both Maple Leaf Foods and the CFIA have since acknowledged that, if the company had conducted meaningful trend analyses of its test results and shared these findings with the CFIA inspectors, the source of the contamination could have been

identified sooner and the sale of unsafe foods may have been prevented.

There was another factor at play that fostered the conditions for *Listeria* to flourish. As referred to earlier, Maple Leaf Foods was producing larger packages of its ready-to-eat meat products for sale to institutions, including hospitals and long-term care facilities whose clientele are at higher risk of infection.

The company had created a recipe that uses less sodium, which was attractive to the institutional market as many of its clients benefited from reduced-sodium diets. However, reduced sodium levels in deli meats are known to increase the risk for bacteria growth, including *Listeria*.

Hospitals and long-term care homes first approached Maple Leaf Foods through one of its distributors about producing larger packages of this low-sodium product, to serve to their patients and residents. The company seized the opportunity to meet the needs of this new market (we were told from 20 cases a week to 2,000 to 3,000 cases a week). Since it considered that its practices were 'state-of-the-art', it did not adapt its

### Michael McCain

"We [Industry] are the ones who make food. Government should set the rules and provide oversight to ensure the rules are being complied with. But, ultimately, safe food depends on the food company, and we have a very material obligation to deliver."

» MICHAEL MCCAIN, PRESIDENT AND CEO MAPLE LEAF FOODS INC. APPEARING BEFORE THE AGRICULTURE SUBCOMMITTEE ON FOOD SAFETY, APRIL 20, 2009

food safety procedures to reflect the higher risks associated with lower sodium levels and larger packages.

It is generally accepted that the concept of zero risk is not achievable in the food processing business, but control measures need to be in place to eliminate risks to the greatest extent possible.

Although there were no regulatory requirements to put products on hold awaiting confirmation that they were *Listeria monocytogenes* free, the company still had an obligation to produce safe foods for the marketplace. An environmental 'hold and test' approach, as recommended by some experts, could have further reduced the risks, but was not in place at Bartor Road in the months leading to the event.

In the end, contaminated food left Bartor Road. And once contaminated packages left the plant, there was a

possibility that vulnerable people could become ill.

Maple Leaf Foods has acknowledged a failure in the 'total food safety system' inside its plants. It has since recognized these problems and has increased its environmental testing program (hold and test). It has also introduced new measures to hold all products until test results indicate that they are *Listeria* free.

As well, the company is looking into other measures to reduce risk including additives, post-packaging high pressure treatment and other technologies that can control *Listeria* growth. And it is considering potential changes to its product packaging.

As Maple Leaf Foods has publicly acknowledged, for the hundreds of consumers who were affected by the contaminated products in 2008, this awareness comes late.

### KEY FINDINGS

- » Two comprehensive reviews of the Maple Leaf Foods Bartor Road plant completed post-outbreak by Maple Leaf Foods International Expert Panel and the CFIA's In-depth Review Audit Team revealed numerous deficiencies that contributed to the outbreak.

### Dr. Brian Evans

"In hindsight, it was determined that the company was doing environmental testing. There was information being kept at the plant that was not provided at that time to the inspector. We must achieve a collective commitment and culture that supports the timely and transparent sharing of all information, even in the absence of regulatory obligation, to maximize food safety outcomes."

» DR. BRIAN EVANS  
EXECUTIVE VICE-PRESIDENT, CFIA

- » The food safety focus in Maple Leaf Foods Bartor Road plant, which has since changed, did not place a priority on controlling *Listeria monocytogenes*.
- » Maple Leaf Foods' Bartor Road plant was aware that it had occurrences of *Listeria* in the plant in 2007 and 2008, and tried to correct the problem with sanitation procedures standard in the industry. As a result, the plant's management thought *Listeria* was under control.
- » Employees in the plant were not required nor did they volunteer information concerning the repeated occurrences of *Listeria* in the plant to the CFIA Inspectors.
- » Maple Leaf Foods staff notified their superiors of the repeated presence of *Listeria* beyond Bartor Road into the Head Office. However, this information did not reach the office of the Chief Executive Officer because it was thought that the plant's interventions had controlled the problem.

- » Maple Leaf Foods did not conduct the trend analysis required under its *Listeria* control policy. Without this analysis, the recurring positive results were not known nor were the positive results verified to determine the presence/absence of *Listeria monocytogenes*. This shortcoming, coupled with the significant demand for these deli meat products from institutions including hospitals and long-term care facilities, exposed a vulnerable population to unnecessary risk.
- » In response to a market opportunity, Maple Leaf Foods produced and sold larger packages of its deli meat products, targeted specifically to institutions such as long-term care homes serving high-risk individuals, using a low-sodium recipe that increased the potential for *Listeria* to grow.
- » Maple Leaf Foods has recognized the shortcomings of its past practices in controlling *Listeria* and has since taken measures to reduce the risk of reoccurrence.

- » The corporate approach to food safety needs to evolve from one of compliance to one of individual commitment – from the Chief Executive Officer to the company janitor.
- » The mandatory Hazard Analysis and Critical Control Point (HACCP) plan is a sound food safety approach for meat processing.

**RECOMMENDATIONS TO MEAT PROCESSORS INCLUDING, BUT NOT LIMITED TO, FEDERALLY REGISTERED ONES:**

- 1. The CEO and senior management of all meat processors should accept oversight responsibility for ensuring that food safety is fully embedded in every level of their business.**
- 2. The CEO and senior management of all meat processors should ensure effective design and actively promote all aspects of food safety consistent with their Food Safety Plan.**
- 3. Food safety plans should be regularly updated to ensure on-going attention to pathogen control.**
- 4. All meat processors should ensure that new and existing equipment is and remains appropriate for the intended use.**
- 5. Sanitation methods should be validated and implemented by meat processors in consultation**

According to experts, environmental testing programs should include a step by step approach to drill further if environmental results identify the presence of *Listeria*. In such situations, further testing is in order to identify if a plant is dealing with *Listeria monocytogenes*.

When such additional tests are being conducted experts recommend that products from that specific production line be put on hold until these further results are obtained.

If they were to be positive then the food products put on hold should be destroyed.

“The idea of a ‘food safety culture’ is that every person in the organization should understand their role in producing safe food and the challenge is in the communication of that message.”

» DR. RANDY HUFFMAN  
CHIEF FOOD SAFETY OFFICER, MAPLE LEAF FOODS JUNE 2, 2009

**with the equipment manufacturer, with a particular focus on the intended use and the products being processed on each piece of equipment.**

- 6. To ensure active and transparent communications, all federally registered meat processors should disclose any threat to food safety occurring in their premises to the CFIA inspectors in a timely manner. Meat processors should not wait for requests for information from the CFIA inspectors and should, in the interests of food safety, ensure that inspectors have all information they require.**

## 2. THE FEDERAL MEAT INSPECTION SYSTEM DID NOT IDENTIFY THESE PROBLEMS

### HOW THE SYSTEM WAS DESIGNED

In addition to industry’s food safety controls and in-house quality assurance processes, the Canadian Food Inspection Agency conducts inspections at registered food processing plants to ensure

firms comply with federal laws and regulations. The inspections comprise an assessment of the company’s compliance with its regulatory requirements which include its HACCP<sup>4</sup> plan. The CFIA inspectors are required to conduct their inspection activities at registered federal meat plants each day. These duties include tasks to be completed daily, monthly, or annually, based on varying levels of risk. In a food processing ready-to-eat plant, such as Maple Leaf Foods on Bartor Road, tasks like verifying the plant’s sanitation program are conducted monthly.

Coincidental to the events that led to the 2008 outbreak, a new federal meat inspection system (Compliance Verification System (CVS)) was introduced, in the spring of 2008, in the nearly 400 federally registered meat processing plants across the country. The CVS was implemented to streamline and integrate previous CFIA inspection approaches. It was first introduced as a pilot project in 2005,

<sup>4</sup> The “Hazard Analysis and Critical Control Point (HACCP) places the responsibility on the food producer to ensure that the product is safe to be consumed. Proposed by the Codex Alimentarius Commission for the food industry in general, and meat, poultry, and seafood industry in particular, it has been adopted by some 150 countries.

which involved approximately 120 plants, including Maple Leaf Foods on Bartor Road.

With the introduction of the CVS (which we heard is a more thorough approach), the CFIA inspectors are required to conduct a complete audit of a plant’s key control systems once within a 24-month period, in addition to enhanced daily inspections.

Prior to this new meat inspection system, audits were scheduled to be conducted every three months, but they did not take place at Maple Leaf Foods Bartor Road plant at the prescribed frequency in 2005, 2006, or 2007. No audit took place in 2008, and they were only conducted three times over this three-year period.

We heard that the new inspection approach is considered a major improvement and sufficient to protect public safety. But we were told of gaps in its design and implementation as well as in the on-going management and delivery of the CVS. These deficiencies are noteworthy because inspection requirements can only be as strong as the regulatory policies and standards against which compliance is verified.

The gaps can be explained, in large measure, by the fact that the CVS was developed and implemented without establishing a detailed business case and in the absence of a rigorous senior management decision-making process. If senior management had been more engaged, the CFIA executives might have recognized



that the new inspection system was being implemented without a detailed assessment of the resources available to take on these new tasks, relative to those needed to apply the new inspection approach. Senior executives might also have recognized that the Manual of Procedures for the meat inspection program needed updating.

Furthermore, the decision to proceed directly from the pilot to full implementation was made with limited evaluation of the pilot's strengths and weaknesses and without detailed costing and adequate determination of resources implications, including the need for supervision and training. We were told that an evaluation of the CVS pilot was prepared but was not discussed throughout the CFIA hierarchy.

We heard that, because these essential steps were not taken, gaps between the *Meat Hygiene Manual of Procedures* – the regulatory framework – and the CVS were never identified and, therefore, not resolved.

### Something we heard during our interviews

It will always be a scenario where we have to improve the CVS ... what is nice about it is the flexibility ... the only challenge we have is to make sure everybody is trained.

These disparities included the policy requirement to monitor the plant's pathogen practices, including *Listeria* controls. The CVS, as developed, did not include a clear task for inspectors to verify a company's *Listeria* environmental controls. We also learned that the CVS was designed to take into account the particularities of each plant's safety provisions contained in its HACCP plan, but this appears to have been lost in implementation.

As another example, the CVS required inspectors to take on different and expanded roles, especially in the area of inspecting the plants' food safety controls. This change required an evaluation of the tasks being assigned and the competencies of the people who would be carrying them out.

We learned that an assessment of competencies needed to deliver the CVS, as well as the resources

required to fully implement it, was not undertaken by the CVS development team. Although training for the implementation of the CVS was developed, it was not fully delivered. There was no formal assessment of the need for change management support. It was also revealed that, since the CVS combined previously implemented food safety approaches, in-depth validation and evaluation steps were not deemed necessary.

We heard varying views on the level and adequacy of resourcing available to deliver this system.

A number of sources said that the lack of staff was a major constraint as was the pressure of time. The system's design did not take account of the number of inspectors or the time available to conduct the CVS tasks because of their other duties, nor did it take into account travel time from plant to plant. Inspectors assigned to Bartor Road were also responsible for several different plants in their district, necessitating travel between these companies daily. Without full consideration of all these factors, it was not possible to adequately assess the resource levels required to properly conduct the full range of activities assigned to inspectors.

### Comparing Sectors

The CFIA's Quality Management Program governing **fish processing** facilities requires frequent audits of plants.

A full review of a company's operations is undertaken every six months and more often if needed.

This approach is based on research indicating that, when full inspections are conducted at intervals of eight months or more, operating standards tend to slip.

The in-depth reviews of the Bartor Road plant identified a variety of structural deficiencies that required correction. Many of these problems were not identified prior to the outbreak, despite daily inspections by Maple Leaf Foods' quality assurance team and third party auditors, as well as CFIA inspectors.

We were also told that supervision, support, and oversight of inspectors were not adapted to the CVS. Further, it was reported that supervisors received minimal training to prepare them for their additional responsibilities.

In addition, we heard that a 'curiosity' factor was not always present in inspectors – understanding the difference between what is needed and what is important. Inspectors were not expressly encouraged to use their judgment, based on their education and experience, or to follow up if something struck them as unusual.

Some inspectors welcomed the CVS given that their workloads did not permit meat inspection tasks to be completed thoroughly. They indicated there was not enough time to take on extra food safety inspection duties outside of their required tasks. Others welcomed the very prescriptive nature of the CVS as they only had to follow the instructions they were given.

## HOW IT WORKED IN PRACTICE

At the time that *Listeria* problems were starting to surface at the Bartor Road plant, inspectors were following their CVS work plans and doing the prescribed activities and their other duties (e.g. export certification) as well as travelling between plants. For example, the day shift inspector had seven different plants to cover (including cold storage facilities for export purposes). We heard that inspectors' workloads left them limited time to accomplish their tasks in depth. What's more the inspectors may have missed early warning signs due largely to the nature of their tasks, insufficient training and understanding of the new procedures and the supervision they received.

In addition, the inspectors were not scheduled to visit the plant between operating shifts when sanitation was taking place to observe whether the plant's sanitation team completely dismantled the equipment or to witness the company's quality assurance officers taking environmental samples. In the case of Bartor Road, these activities often occurred in the middle of the night, as the company was operating two shifts. This schedule reduced the potential that inspectors would pick up on possible problems.

More significantly, the Bartor Road plant's HACCP plan required environmental *Listeria* testing but the company was not obliged to report

its test results to the CFIA. Equally notable, the CFIA inspectors had no obligation to request or examine the company's *Listeria* testing results under their CVS tasks. Had the CFIA inspectors reviewed these test results they could have identified the frequency of positive *Listeria* results and brought this concern to the attention of the plant management.

Other potential factors contributing to the outbreak were the general belief that both Maple Leaf Foods' food safety system and the CFIA's inspection system were reliable, and that the Bartor Road plant needed minimal oversight since it had historically not presented cause for concern.

The issues identified during the two post-outbreak reviews conducted by the Maple Leaf Foods panel of independent experts and the CFIA's In-depth Review Audit Team pointed to deficiencies in the inspection system.

## KEY FINDINGS

- » The new federal inspection system (CVS) was put into effect in the spring of 2008 at the same time that Maple Leaf Foods' environmental testing was identifying *Listeria* at the Bartor Road plant.
- » Insufficient consideration was given to the effect that the CVS would have on the ability of the inspectors to perform their tasks.
- » Although the CVS is regarded as a sound system and has



broad support, it needs critical improvements related to its design, planning and implementation.

- » Training necessary to implement the new CVS system was developed but not fully delivered and lacked change management support.
- » The lack of its adaptation to the specific risks of each plant weakened the implementation of the CVS.
- » Under the CVS, the CFIA inspectors were not required to fully examine key food safety controls (e.g. sanitation program) or to verify how the company was reviewing its environmental testing results.
- » In the lead-up to the outbreak, the number, capacity and training of inspectors assigned to Bartor Road appear to have been stressed due to their responsibilities at other plants, the complexity of Bartor Road including its size and hours of operation, and necessary adjustments required by the implementation of the CVS.
- » Due to the lack of detailed information and differing views heard, we were unable to determine the current level of resources as well as the resources needed to conduct the CVS activities effectively. For the same reason, we were also unable to come to a conclusion concerning the adequacy of the program design implementation plan, training and

supervision of inspectors, as well as oversight and performance monitoring.

## RECOMMENDATIONS

- 7. To accurately determine the demand on its inspection resources and the number of required inspectors, the Canadian Food Inspection Agency should retain third-party experts to conduct a resources audit. The experts should also recommend required changes and implementation strategies. The audit should include analysis as to how many plants an inspector should be responsible for and the appropriateness of rotation of inspectors.**
- 8. The Canadian Food Inspection Agency should ensure that inspectors receive timely education and training specific to each function they perform. This education should be based on an assessment of the additional training required to address gaps in the knowledge and abilities of inspection staff. Inspectors should regularly receive a mandatory program on current trends in science and technology in the processing of food, including compliance and verification processes.**
- 9. The Canadian Food Inspection Agency should equip its inspectors**

**with modern technology (e.g. e-note pad) to increase their efficiency.**

- 10. The Canadian Food Inspection Agency should amend its meat inspection system (CVS) to ensure:**
  - a. the appropriate human resources are available to respond to workload requirements;*
  - b. comprehensive training based on required competencies and skills;*
  - c. timely delivery of ongoing training; and*
  - d. supervision of inspection staff structured to encourage enterprise and accountability.*

## 3. THERE WERE GAPS IN THE FEDERAL RULES GOVERNING MEAT PRODUCTION AND INSPECTION

Maple Leaf Foods has stated that it was meeting all federal legislative and regulatory obligations at the time of the outbreak. Even so, there were gaps in the regulatory framework that allowed this outbreak to happen.

As noted previously, the federal food safety framework is the responsibility of Health Canada and the Canadian Food Inspection Agency. The two organizations have interdependent roles: Health Canada is responsible for the *Listeria*

*monocytogenes* Policy; which is complemented by the CFIA *Meat Hygiene Manual of Procedures*, which includes the CFIA testing program (i.e. equivalent to its internal instructions to inspectors).

## HEALTH CANADA

### LISTERIA MONOCYTOGENES POLICY

When Health Canada's *Listeria monocytogenes* Policy was first published in 2004, it put Canada at the forefront of food safety policy. However, we learned that, even though it is only a few years old, it has not kept pace with rapid advances in science, knowledge and technologies.

The Policy sets the standards for the acceptable level of *Listeria monocytogenes* in ready-to-eat products and provides guidance to food processors and the CFIA inspectors about managing the risks of *Listeria*. If the bacterium is found on a company's equipment, the Policy indicates that the contaminated area is to be cleaned and to be retested. If these results come back negative, the company can continue to produce and ship its food products.

In the case of Maple Leaf Foods this Policy was followed and even exceeded, at the time *Listeria* was detected at the Bartor Road plant. However, the Policy measures were insufficient to address the underlying source of contamination (e.g. the slicing equipment where the bacterium was harboured).

The Policy offers no concrete advice on how industry should prevent *Listeria* contamination or how to meet the standards it sets, including environmental testing requirements. There is also no recognition that "harbourage sites," such as slicers, make it harder to identify and find *Listeria*.

The Policy references "trend analysis" but does not describe what is meant by the term nor does it offer advice on what outcomes or results are to be achieved by such analyses.

### KEY FINDINGS

- » The current Health Canada *Listeria monocytogenes* Policy does not provide adequate direction on expected outcomes leaving room for interpretation by industry.
- » The lack of integration between Health Canada and CFIA policies created gaps and overlap that led to confusion.

## RECOMMENDATION

**11. Health Canada should complete the revision of its 2004 *Listeria* Policy, by no later than March 2010, and ensure that:**

- a. *the Policy outlines clearly and concisely the expected results for all identified food products where *Listeria* is a potential threat to human health, consistent with international standards;*
- b. *risk categories of ready-to-eat product are retained, although they should be more clearly defined;*
- c. *post-processing measures that control *Listeria monocytogenes* are considered when determining product risk categories; and,*
- d. *it focuses only on the safety of foods (i.e. should be a food safety standard) and not on providing risk management direction to the food industry or the Canadian Food Inspection Agency.*

## FOOD ADDITIVES AND TECHNOLOGIES

As indicated in the previous chapter, Health Canada is also responsible for the approval of additives for use in foods to control or destroy pathogens. In addition, it approves many other substances and chemicals used during food processing and manufacture including food enzymes (e.g.: used in

### Something we heard during our interviews

The Policy should have stipulated what the outcomes of controlling *Listeria* should be – ensuring the bacterium is monitored and that all possible measures are taken to control and prevent it from contaminating food products.

cheese production), colouring agents, gelling agents, and fining agents.

We learned that some food additives and technologies, which had been approved in other countries and could have reduced the risks associated with *Listeria*, had been waiting for Health Canada approval for several years. We were told that a backlog had built up and that each new product brought forward for approval was being considered on a ‘first come, first served’ basis. Even if these products had been approved, Maple Leaf Foods would not have been obligated to include them in their recipes or processes.

### KEY FINDING

- » In approving food additives and technologies, Health Canada has not been taking into account food safety considerations when assigning priorities for approval of these substances and processes.

### Suggestion

“The government should consider allowing the use of bacteriophages, food additives to kill *Listeria*, for ready-to-eat meats.”

» A SUGGESTION BY A FAMILY AFFECTED BY THE OUTBREAK

## RECOMMENDATION

**12. Health Canada should review its approval processes and fast track, where appropriate, new food additives and technologies that have the potential to contribute to food safety giving particular attention to those that have been scientifically validated in other jurisdictions (provinces or countries).**

## DESIGN OF FOOD PROCESSING EQUIPMENT

Food processing plants use a vast array of tools and equipment on their production lines, including slicers and conveyors. This equipment, particularly in ready-to-eat plants, needs to be frequently cleaned and sanitized to produce safe foods. For this reason, its design must accommodate hygiene considerations.

Maple Leaf Foods’ International Expert Panel concluded that the most likely origin (root source) of the contamination of deli meat products was deep inside a commercial meat slicer. The company has reported that to disassemble the meat slicing machines, thoroughly sanitize and then reassemble them, necessitated shutting down the plant for three days. Their conclusions are suggestive of design problems, which made regular cleaning of the commercial slicers both difficult and costly for the food processor.

The American Meat Institute has developed stringent specifications for the design of slicers and other equipment, which it identifies as “10 principles of sanitary design.” The Institute confirms that equipment sanitary design and operation are critical to the control of *Listeria* contamination in ready-to-eat meat and poultry processing plants. The American Meat Institute believes that the sanitary design of equipment can be achieved “through a non-competitive and cooperative effort between customers and suppliers.” However, their specifications do not address peer-level review of the design, operation and recommended sanitation methods for food processing equipment.

### KEY FINDING

- » Increased coordination and improved communication about food processing equipment is needed among the manufacturer, the food processor and the CFIA regarding design specifications and the validation of sanitation procedures.

## RECOMMENDATIONS

**13. Manufacturers of food processing equipment should ensure that their specifications and instructions to users specifically emphasize the necessity to control the risk of pathogens, including *Listeria monocytogenes*.**

“*Listeria* control is about good plant hygiene and good manufacturing practices. But it is also about equipment and building design.”

» JIM LAWS, CEO, CANADIAN MEAT COUNCIL

**14. In addition, manufacturers of food processing equipment should accept responsibility for the foreseeable impact of the design and operation of their equipment on food safety. The design and operation of, and recommended sanitation methods for all food processing equipment should:**

- a. *enable thorough cleaning and disinfection;*
- b. *allow for efficient and complete disassembly and reassembly when required;*
- c. *eliminate to the fullest extent possible all areas likely to harbour pathogens, including *Listeria monocytogenes*;*
- d. *wherever possible, use material that is scientifically validated to limit pathogen growth or survival; and*
- e. *be peer-reviewed (applicable only for the recommended sanitation methods).*

**THE CFIA'S MEAT HYGIENE MANUAL OF PROCEDURES**

The federal *Meat Inspection Act* provides the authority for the *Meat Hygiene Manual of Procedures* (which is equivalent to a regulation). The manual requires food processors to control pathogens such as *Listeria*

*monocytogenes*. The manual, which is complemented by directives and guidelines, is the main document guiding the CFIA inspectors and operators of meat processing plants for the production of safe food.

The manual is not reviewed on a routine basis and at the time of the outbreak, was out-of date. Aside from being out of date, it is prescriptive in its approach. In an effort to be complete, the manual provides very generic information in most cases so food processors do not have a clear indication of what outcomes they should be working toward or how to control *Listeria monocytogenes*. In fact, although plants were expected to control pathogens, the manual offered no practical information on how to sample and test, what to test or which bacteria should be tested. The lack of precise detail in the instructions left too much room for interpretation, allowing almost any action to meet the written rule without achieving the outcome sought.

The Health Canada *Listeria monocytogenes* Policy is complemented by the CFIA testing program, which is equivalent to the internal instructions to inspectors. The testing program sets out the operational requirements for inspectors to monitor the safety of

products identified by the standards in the Health Canada Policy.

In 2005, the CFIA updated its testing program, eliminating the obligation of inspectors to conduct environmental monitoring for *Listeria* on food contact surfaces in plants. This was done, at least in part, to better align and maintain equivalency with newly instituted requirements from the US Department of Agriculture. Canadian food processors need to match US requirements in order to continue exporting their products to this important market.

**KEY FINDINGS**

- » The latest CFIA *Listeria* directive does not distinguish between foods at much lower risk of harbouring *Listeria* (e.g. dried and frozen meats) and those that are much higher risk (e.g. deli meats, hot-dogs, soft cheeses).
- » Out-of-date manuals and policies contributed to a weakened government oversight.

**RECOMMENDATIONS**

**15. The Canadian Food Inspection Agency, in conjunction with and in conformity to the proposed revisions to Health Canada's *Listeria* Policy, should strengthen its February 2009 *Listeria* controls found in the *Meat Hygiene Manual of Procedures* to focus on control measures for *Listeria* in ready-to-eat meat products, in addition to the current environmental and product testing:**

## Comparison of Canada vs. US Listeria Rules (select)

Listeriosis outbreaks in the United States from 1998 to 2002 resulted in 100 illnesses and 21 deaths. In response, the U.S. Drug Administration (USDA) changed its rules governing *Listeria monocytogenes* to include approval for additives,

such as sodium lactate, that are proven to reduce the risks of foodborne illnesses.

Health Canada's policy, although amended in 2004, did not include these improvements.

- a. *to ensure that any required testing is a verification step to confirm the effectiveness of the company's Listeria control program and not a control program in itself;*
- b. *by differentiating the testing requirements to reflect the risk associated with each product (i.e. more testing for high-risk products and less for low-risk ones);*
- c. *by requiring the testing of non-food contact surfaces in the processing environment;*
- d. *by establishing 'hold and test' product control requirements following positive test results for Listeria on food contact surfaces as follows:*
  - i. *several tests for Listeria on food contact surfaces should be conducted immediately on and around the area where positive results were found to determine:*
    - » *if there is persistent contamination, or*
    - » *if the previous positives have already been dealt with using standard sanitation procedures;*

- ii. *if the follow-up tests are positive, then testing for Listeria monocytogenes must occur in products from the production line of concern<sup>5</sup>. During this testing phase, all products produced on that line and day (i.e. between two complete sanitation shifts) should be withheld from the marketplace until the results are known;*
- e. *by further defining expectations of trend analysis to identify weaknesses in the company's control programs (including its HACCP plan) by determining if a pattern of contamination is emerging.*

### **16. The Canadian Food Inspection Agency should revise its monitoring programs (M-200 and M-205 plans), by tailoring the sampling frequencies to**

<sup>5</sup> The testing requirements (e.g. number of tests) should be based on an authoritative source such as the International Commission on Microbiological Specifications for Food and should be consistent with the Health Canada's *Listeria* Policy.

**each plant based on risk factors including compliance history, product risks and target market (i.e. higher sampling frequency in some plants, lower in others.)**

- 17. The Canadian Food Inspection Agency should review and update existing food safety programs, regulations and directives to best reflect current food safety practices.**
- 18. The Canadian Food Inspection Agency should update its *Food Safety Enhancement Program Manual* to require food processors to include all standard operating procedures and good manufacturing practices in their food safety plan.**
- 19. The Canadian Food Inspection Agency should ensure that the *Meat Hygiene Manual of Procedures* is updated whenever there is a significant change to the practices imposed on industry.**
- 20. The Canadian Food Inspection Agency should formally communicate its expectation that registered meat processors will bring all information with potential consequences for food safety to the attention of their assigned inspector in a timely manner.**



## 4. ONCE CONTAMINATED PRODUCTS ENTERED THE FOOD SUPPLY, INSTITUTIONS SERVED IT TO VULNERABLE POPULATIONS

Another, quite reasonable assumption at the time of the outbreak was the general belief that ‘ready-to-eat’ meats, such as deli meats, are safe to eat without the need for additional preparation or precaution.

While true for the most part, in the case of vulnerable populations, contamination with *Listeria monocytogenes* can have serious consequences. Of the 57 eventual confirmed cases of listeriosis during this outbreak, 54 of the individuals who became ill were elderly people in hospitals and long-term care homes. The operators of these facilities served the ready-to-eat food products – working from the assumption, based on years of experience, that the products were nutritious, easy to chew and safe – without taking extra precautions or avoiding serving them to vulnerable populations.

### RECOMMENDATION

**21. Organizations providing housing and/or food services to seniors and other vulnerable groups, including long-term care homes and hospitals, should be encouraged to adopt food safety**

**practices aimed at vulnerable populations, including those most vulnerable to listeriosis (such as the practices set out in the British Columbia Guideline for Food Services or in guidelines issued by the other provinces and territories.)**

## 5. AS CONTAMINATED FOOD WAS BEING CONSUMED, THE PUBLIC HEALTH SYSTEM SLOWLY RECOGNIZED THE OUTBREAK

In recent years, Canada, and indeed the world, has been confronted with wave after wave of health crises. From SARS and West Nile virus, to mad cow disease, the listeriosis outbreak and the H1N1 virus, we have been reminded of the threats such infections pose to our health. Canadian governments, industry, and citizens have strived to protect themselves from these threats.

The Public Health Agency of Canada was created in 2004 in response to SARS and the growing recognition that we need to better anticipate and plan for health emergencies and be better coordinated in our responses when they arise. The Agency has a mandate to prepare for and respond to public health emergencies, strengthen Canada’s capacity to protect and improve the health of Canadians,

prevent and control infectious and chronic diseases, and injuries, and promote health.<sup>6</sup>

Nevertheless, as a growing number of people started to get seriously ill in the summer of 2008, weaknesses in the system became apparent.

As it became increasingly clear that this was likely a foodborne emergency<sup>7</sup> and people were treated, the public health sector gradually responded but there were delays in mobilizing a full response. With the benefit of hindsight, the reasons for the gradual response are more evident.

First, listeriosis is both less common than other foodborne illnesses and more difficult to diagnose, so it was not immediately obvious that an outbreak was emerging. When isolated cases of listeriosis are detected, they are generally dealt with at the local level. This is normal, and a small number of cases does not immediately trigger suspicion or provoke an emergency response. There are routinely five to six such cases reported each month in Ontario. It was only when clusters of listeriosis cases became apparent in different communities across Ontario that there was increased action at the provincial and, eventually, the national level.

<sup>6</sup> Public Health Agency of Canada, *About the Agency: Who We Are; What We Do*, online [http://www.phac-aspc.gc.ca/about\\_apropos/index-eng.php](http://www.phac-aspc.gc.ca/about_apropos/index-eng.php)

<sup>7</sup> A foodborne emergency occurs when people are becoming ill from a common contaminated food source.

## Ontario's iPHIS and EARS

- In 2005, Ontario developed and put into place a web-based system: integrated Public Health Information System (iPHIS).
- All 36 public health units in Ontario are legally obligated to enter case information on all notifiable diseases (including listeriosis) into iPHIS.
- The Public Health Division (of Ontario's Ministry of Health and Long-Term Care) monitors and analyzes the iPHIS data daily - supported by a program called Early Aberration Reporting System (EARS).
- EARS detects statistical increases in the number of cases above the norm and therefore can help Public Health Division officials detect an outbreak.

The next challenge faced by the public health sector was determining which food was causing the illness and establishing the source of this food. Most foodborne illnesses are caused by contamination of food while it is being handled or prepared.

With this understanding, Toronto Public Health inspectors used a standard investigative approach in investigating the initial listeriosis cases. This included determining the likelihood of food handling contamination at the institution and through testing of food, a determination of how the pathogen found its way into the kitchen. In this instance, with two illnesses from the same Toronto area long-term care home, and with no other illnesses yet linked, the public health inspectors' focus was primarily on the possibility of cross-contamination resulting from the way food was handled in the kitchen, and secondarily on where the food might have been manufactured.

A further factor is that, traditionally, foodborne illness outbreaks were traced to locally produced and distributed food products. This is less and less the case in today's world of globalization and large scale food production. So in the first few days, the public health inspectors did not immediately suspect a nationally distributed food product.

### HOW THE PUBLIC HEALTH SURVEILLANCE SYSTEM WORKED IN PRACTICE

There is a patchwork of disease reporting and recording procedures used across the country. The approach varies from one jurisdiction to the next. For example, in British Columbia physicians were not required to report listeriosis cases. These differences do not matter when an illness is confined to one province but, as soon as it jumps borders, these variations matter. An additional factor was that Ontario had recently changed its surveillance system. In the aftermath of SARS,

Ontario had instituted new disease detection and prevention measures in its public health system. The improvements included iPHIS (integrated Public Health Information System), a web-based system used by all public health units to report infectious, communicable and foodborne diseases, and EARS (Early Aberration Reporting System), which detects increases in cases to identify an outbreak when the number exceeds the norm.

We were told that the new system was better than what existed before but that it was not as effective as public health officials believed at the time. iPHIS and EARS were not yet fully developed nor completely implemented, particularly for monitoring foodborne illness. Public health units were required to upload notifiable disease data into iPHIS but we heard that local resources were not readily available to input all the information on a timely basis.

Delays in entering local data, coupled with incomplete records, held up the epidemiological investigation at the provincial level. These investigations are vital to assess the risks to the general population or to identify specific groups at increased risk.

Also problematic, the early warning system was not as helpful as intended because local public health units only had access to the data of their district but could not access the data of the



other 35 Ontario public health units and therefore could not see the spread of disease across the province. At the time of the outbreak, the data was only available to some sections within the Ontario Ministry, and the information received was not complete.

While the reasons are numerous and, in retrospect, understandable, the fact remains that the data on the listeriosis cases that began to appear in July of 2008 was not entered immediately into iPHIS by many local public health units. As a result, the Ontario Ministry did not have all the information it needed to assess the ‘bigger picture’. Without all the necessary facts at hand, officials did not fully understand the level of contamination in the food supply and thus were unable to issue early health advisories to institutions caring for vulnerable populations or the general public until the outbreak was well advanced.

## KEY FINDINGS

- » The pattern of isolated cases occurring in different public health units across Ontario, over a number of weeks, meant that the small increase in cases was hard to identify.
- » Early in the outbreak, there were delays in some local public health units to enter case information into Ontario’s surveillance system; this improved over the course of the outbreak when the Ontario Chief Medical Officer of

Health requested that they enter listeriosis cases into the system on an urgent basis.

- » In the 2008 outbreak, the Ontario surveillance systems helped detect the Ontario-wide outbreak; without these systems, the outbreak would have been detected later – possibly after more vulnerable people became ill.
- » The approach to gathering food samples by local public health staff at the long-term care home was geared towards identifying a local source for the outbreak (e.g. cross contamination in the kitchen); this delayed identification of the commercial food source.

## RECOMMENDATION

- 22. The federal, provincial and territorial governments should continue to use and support surveillance and monitoring systems, such as the Canadian Integrated Outbreak Surveillance Centre (CIOSC), and consider the development of next generation systems (e.g. Panorama).**

### NEXT CHAPTER

“The chain of events that led to the initial identification of the outbreak and the eventual recall of contaminated meats produced by Maple Leaf Foods is not easily or succinctly explained...”



# CHAPTER 6

## How did events actually unfold?

### How did events actually unfold?

The chain of events that led to the initial identification of the outbreak and the eventual recall of contaminated meats produced by Maple Leaf Foods is not easily or succinctly explained.

A foodborne emergency is complex because of the multiple sectors involved and the way Canada's health and food safety systems work.

Three levels of government have different roles to play in such incidents. Within the federal government alone, there are three different organizations, each with unique mandates and functions.

In addition, both the health and food safety systems are science based and depend on sophisticated methodologies and technologies.

Taken together, the reasons why it took several weeks to confirm the source of the outbreak and to stop the distribution of contaminated food became clearer.

In hindsight, we recognize that the first person who developed listeriosis as part

of this outbreak became ill in the first week of June. Therefore, contaminated Maple Leaf Foods products were on the market and being consumed before that time.

The problem was not picked up by the surveillance systems designed to identify foodborne outbreaks until later, due in part to the long incubation period. This chapter highlights the key milestones in

the 2008 listeriosis outbreak, explaining the decisions and actions of government. A detailed chronology listing all of the events can be found in Appendix B.

WHAT HAPPENED	HOW IT HAPPENED
<b>JULY 2008</b>	
<ul style="list-style-type: none"> <li>» First 2 listeriosis cases (later identified as part of the outbreak through DNA fingerprinting)</li> </ul>	<p>We now know that the pivotal factors concerning this event began to unfold around <b>Thursday July 10<sup>th</sup></b>, when the Public Health Agency of Canada’s National Microbiology Lab<sup>1</sup>– the national reference laboratory for human biological testing – received two <i>Listeria</i> specimens for DNA fingerprinting of the pathogen. These samples were taken from the first two Ontario patients diagnosed with listeriosis by their treating physicians; both would later be associated with the outbreak. We know these patients were from Ontario but the specimens did not have detailed information that would identify them when they reached the reference lab.</p>
<ul style="list-style-type: none"> <li>» Two cases of listeriosis diagnosed in 2 residents of the same Toronto area long-term care home</li> </ul>	<p>A few days later, two residents of a Toronto area long-term care home became seriously ill. Based on lab results, the attending physicians diagnosed listeriosis. The original blood tests in these two cases were done by a private laboratory which didn’t retain or forward the samples for further testing. This made it impossible later in the investigation to confirm the strain of <i>Listeria</i> that affected these two individuals. Nonetheless, their treating physician reported to Toronto Public Health, his concern that there were two cases of listeriosis involving residents living in the same home.</p>
<b>WEDNESDAY, JULY 16<sup>TH</sup></b>	
<ul style="list-style-type: none"> <li>» Toronto Public Health inspectors began investigating two cases of listeriosis in the Toronto area long-term care home</li> </ul>	<p>With this information, Toronto Public Health investigated the Toronto area long-term care home where the two residents lived, to try to find the cause of their illness. Public health inspectors conducted their investigation considering a potential food handling problem in the kitchen.</p>

<sup>1</sup> National Microbiology Laboratory in Winnipeg

WHAT HAPPENED	HOW IT HAPPENED
<b>FRIDAY, JULY 18<sup>TH</sup></b>	
» Match confirmed on DNA fingerprinting from first two human samples	PHAC's National Microbiology Lab confirmed that the two human listeriosis samples received from Ontario on July 10 <sup>th</sup> had matching DNA fingerprints, which meant the two cases were linked.
<b>MONDAY, JULY 21<sup>ST</sup></b>	
» Toronto Public Health inspectors picked up food samples from a Toronto area long-term care home.	Toronto Public Health went back to the Toronto area long-term care home to collect 11 food products (e.g. sandwiches and cheeses) from samples of meals previously prepared and served at the home (Institutions such as long-term care homes are not required to keep such samples under provincial regulations). When the samples were collected, the name of the food supplier and product identification information such as 'best before' dates were not available or recorded.
<b>TUESDAY, JULY 22<sup>ND</sup></b>	
» No cases appear on Ontario's surveillance system	The Ontario Ministry checked its surveillance system to see if an unusual number of listeriosis cases had been reported from long-term care homes. As not all of the data had been loaded into the surveillance system, the answer came back 'no'.
» 11 food samples received by Ontario Ministry	The Ontario Ministry received 11 food samples from Toronto Public Health from the investigation launched July 16 <sup>th</sup> .
<b>WEDNESDAY, JULY 23<sup>RD</sup></b>	
» 11 food samples now sent to Reference Laboratory in Ottawa as routine samples	The Ontario Ministry sent the 11 food samples to Health Canada's National Reference Lab in Ottawa, the national reference laboratory for food testing. These food samples were identified as 'routine' with the main symptom noted as 'fever' rather than indicating a death linked to a food safety investigation.
» Long-term care home operator withdraws high risk food products	Toronto area long-term care operator stopped serving, at all of their facilities, all foods that could potentially pose a <i>Listeria</i> health risk to its residents, including cold cuts, cheeses and ice cream.
<b>FRIDAY, JULY 25<sup>TH</sup></b>	
» Increased cases now detected on the provincial surveillance system	The Ontario Ministry began to detect an increase in the number of cases of listeriosis, which were now reported on the provincial surveillance system.

## WHAT HAPPENED

## HOW IT HAPPENED

### FEDERAL MONITORING OF THE EVENT BEGINS

#### TUESDAY, JULY 29<sup>TH</sup>

» Ontario notifies Public Health Agency of Canada that clusters of cases are emerging in the province

The Ontario Ministry concluded that a cluster of illnesses was emerging, although it had limited information on the precise food product that was the source of the disease.

» Alert posted on the federal surveillance system

With this pattern detected, the Ministry notified its federal counterpart, the Public Health Agency of Canada (PHAC), and posted an alert on the national surveillance system. This alert was accessible to all provinces and territories, Health Canada, and the CFIA.

#### WEDNESDAY, JULY 30<sup>TH</sup>

» Conference call with Ontario and the Public Health Agency of Canada to discuss reporting and routing of lab samples  
» Enhanced surveillance alert issued to all Ontario public health units by Ontario Ministry

Following the national surveillance system alert, a conference call was initiated by the Ontario Ministry that included 15 of Ontario's 36 public health units, PHAC, and Health Canada. It was decided that, for all existing cases or new cases identified, each local health unit would submit human samples to the PHAC's National Microbiology Lab and food samples to Health Canada's National Reference Lab via the Ontario Ministry public health laboratory. These samples would be collected by the Ontario Ministry and forwarded to the federal labs. It was also agreed that the Ministry would issue an Enhanced Surveillance Directive to all Ontario public health units, requesting additional and timely reporting of listeriosis cases through the provincial surveillance system as well as providing the information regarding where the human and food samples were to be sent.

#### MONDAY, AUGUST 4<sup>TH</sup>

» Three of 11 food samples from the Toronto area long-term care home test positive for *Listeria monocytogenes*

The results of the 11 food samples collected from the Toronto area long-term care home on July 21<sup>st</sup> and tested by Health Canada's National Reference Lab were emailed to the Ontario Ministry. Three of the 11 food samples were positive for *Listeria monocytogenes*. Since the samples came from a Toronto institution, the Ontario Ministry informed it of the results.

## WHAT HAPPENED

## HOW IT HAPPENED

### FEDERAL INVOLVEMENT IN THE EVENT BEGINS

#### WEDNESDAY, AUGUST 6<sup>TH</sup>

» Toronto area long-term care home suspects Maple Leaf Foods products to be the source of listeriosis	The Toronto area long-term care home management suspected that its two residents had contracted listeriosis from eating sandwiches made with deli meats produced at the Maple Leaf Foods Bartor Road plant. The staff shared this information with the Ontario Ministry of Health and Long-term Care..
» Help requested from CFIA	Toronto Public Health requested the Canadian Food Inspection Agency's assistance.

#### THURSDAY, AUGUST 7<sup>TH</sup>

» CFIA initiates a food safety investigation	The CFIA initiated a food safety investigation on the extent and source of the potential food hazard. It received confirmation from Toronto Public Health that Maple Leaf Foods deli meats used in sandwiches taken from the long-term care home tested positive for <i>Listeria monocytogenes</i> .
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#### FRIDAY, AUGUST 8<sup>TH</sup>

» CFIA conducts document review but no irregularities are reported	The CFIA conducted a document review at Maple Leaf Foods Bartor Road plant to determine if the facility was following its food safety plan. No anomalies were noted or reported.
» CFIA requests deli meats distribution records	Late in the day, the CFIA requested distribution records for deli meats. Maple Leaf Foods' Sales Office, which keeps these records, was closed for the weekend.

#### MONDAY, AUGUST 11<sup>TH</sup>

» Distribution records received from Maple Leaf Foods	The CFIA received product distribution records from Maple Leaf Foods that included product codes and 'best before' dates for products that were used at the Toronto long term care home in July. These Sure Slice brand products were mainly sold to institutions, such as hospitals, long term care homes, prisons, restaurants and hotels.
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WHAT HAPPENED	HOW IT HAPPENED
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<ul style="list-style-type: none"> <li>» Search begins for unopened food packages to verify the source</li> </ul>	<p>Maple Leaf Foods' three largest distributors were contacted, but they had no remaining products matching the specific codes and dates in their inventory. The CFIA broadened its search of suspected products to include other long-term care homes in an attempt to locate any unopened-packages<sup>2</sup> of the product in their inventory.</p>
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HOW GOVERNMENTS RESPONDED	
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TUESDAY, AUGUST 12 <sup>TH</sup>	
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<ul style="list-style-type: none"> <li>» DNA fingerprint matches cases from several provinces</li> <li>» <b>This was the first indication that a national outbreak might be developing</b></li> </ul>	<p>The PHAC's National Microbiology Lab confirmed that DNA fingerprinting patterns on human cases from Ontario matched cases from other provinces, including Newfoundland &amp; Labrador and Quebec.</p>
	<p>Concurrently, Quebec was beginning to deal with another listeriosis outbreak (of a different DNA fingerprint), this time traced to cheese, which resulted in 38 illnesses and two deaths (plus 3 babies who died at birth or shortly after).</p>
<ul style="list-style-type: none"> <li>» Halton long-term care homes advised to discontinue serving deli meats to residents</li> </ul>	<p>Based on the available information, the Halton Region Health Department issued a precautionary advisory to long-term care homes in its region. It notified them that Maple Leaf Foods deli meat products were potentially contaminated and recommended they suspend serving these products to their residents.</p>
<ul style="list-style-type: none"> <li>» Unopened package of suspected meat located and sent for testing to confirm source</li> </ul>	<p>Meanwhile, the CFIA located an unopened package of the suspected Maple Leaf Foods meat for testing. The package came from another long-term care home affiliated with the home where the early listeriosis cases were first observed. These unopened food packages were sent to the CFIA's Toronto lab for testing. The CFIA continued to look for samples in long-term care homes and among other clients.</p>

<sup>2</sup> Meat from unopened packages was sought to provide conclusive evidence that these products were the source of the listeriosis outbreak, which is standard recall procedure.

WHAT HAPPENED	HOW IT HAPPENED
<ul style="list-style-type: none"> <li>» Two cases appeared in a Burlington hospital but were not initially connected to Maple Leaf Food products (were later linked)</li> </ul>	<p>The CFIA was also notified by the Halton Region Health Department of two additional listeriosis cases at a hospital in Burlington. However, there was conflicting information initially about these cases. The CFIA was told that two samples of Maple Leaf Foods deli meats served at the hospital had tested positive for <i>Listeria monocytogenes</i>, but it was first reported that the two patients had not consumed the suspected deli meats. Later, it was confirmed that the two patients did, in fact, eat the contaminated meat while in the hospital. Testing confirmed that their illnesses were linked to the outbreak.</p>
<ul style="list-style-type: none"> <li>» A possible link is found between cases at the Burlington hospital and the long-term care home</li> </ul>	<p>As was the case with the Toronto area long-term term home, food samples taken from the Burlington hospital did not include product code information. Since product test results from the two institutions could not be linked initially, a separate food safety investigation was initiated by the CFIA. In the course of this new investigation, the CFIA was informed by one of Maple Leaf Foods' distributors of a possible connection between the two institutions. The distributor had delivered deli meats to the Burlington hospital with the same suspected codes as those being investigated at the Toronto area long-term care home.</p>

**WEDNESDAY, AUGUST 13<sup>TH</sup>**

<ul style="list-style-type: none"> <li>» Maple Leaf Foods advises its distributors to hold certain Sure Slice products</li> </ul>	<p>Maple Leaf Foods sent a letter to its distributors informing them that the Canadian Food Inspection Agency was investigating illnesses that could be related to its products. It advised distributors to place on hold any remaining inventory of Sure Slice Roast Beef, Corned Beef and Black Forest Ham.</p>
<ul style="list-style-type: none"> <li>» The CFIA initiates a conference call to exchange information</li> </ul>	<p>The CFIA organized a teleconference involving the Public Health Agency of Canada, Health Canada, the Ontario Ministry of Health and Long-Term Care and Ontario public health units to update and exchange information. It was learned that listeriosis cases had now been identified in Simcoe, Peterborough and Etobicoke. It was also discussed that Maple Leaf Foods products could be the possible source of the outbreak.</p>

WHAT HAPPENED	HOW IT HAPPENED
» Ontario public health units conduct a food sampling blitz	Ontario Public health units agreed to support the CFIA by undertaking a large scale sampling ‘blitz’ to cover all Sure Slice brand products with ‘best before’ dates from August 1 to September 30, 2008 of products that were likely to be still in the marketplace produced on two suspected production lines at Maple Leaf Foods Bartor Road plant.
» Decision made that more information needed prior to recall	The conference call concluded that more precise information regarding human health hazard and exposure was needed before the CFIA, in collaboration with Health Canada, could initiate a food recall. It was believed that the Sure Slice deli meats had only been distributed to large institutions, so it was not necessary to notify the general public. These products were not thought to be sold to retailers.
» The Public Health Agency of Canada notifies labs country-wide of cases in multiple provinces	At the same time, the PHAC’s National Microbiology Lab notified labs across Canada that DNA fingerprinting showed a clustering of human cases of listeriosis with a similar strain in more than one province.
» The CFIA identifies a possible link between Bartor Road plant and positive food samples	By now, the CFIA had identified a possible link among five positive food samples – three from the Toronto area long-term care home and two from the Burlington hospital. The CFIA’s review of production and distribution records at Maple Leaf Foods Bartor Road plant indicated the suspected products might all have originated on production lines 8 and 9.
<b>THURSDAY, AUGUST 14<sup>TH</sup></b>	
» Confirmation that 1 <sup>st</sup> listeriosis death in mid-June linked to consumption of deli meats	The first death linked to the consumption of contaminated Maple Leaf Foods deli meat products was confirmed as having occurred on June 17, 2008.
» Toronto Public Health advises all institutions to stop serving Sure Slice products	Toronto Public Health inspectors started contacting all institutions within their jurisdiction to advise them not to use Maple Leaf Foods Sure Slice brand products (as per Maple Leaf Foods’ advisory to its distributors the previous day).

WHAT HAPPENED	HOW IT HAPPENED
<b>FRIDAY, AUGUST 15<sup>TH</sup></b>	
» The Public Health Agency of Canada assumes coordinating role in the epidemiological investigation	The PHAC assumed the coordinating role for the epidemiological investigation of the outbreak since cases of listeriosis were now being identified nationally. This was done according to the <i>Foodborne Illness Outbreak Response Protocol</i> (FIORP).
» Public Health Agency of Canada issues alert to all public health authorities in Canada	The PHAC issued an alert to all public health authorities across Canada about the Ontario outbreak and requested they collect information on the consumption of deli meats for cases matching the DNA fingerprint associated with the outbreak.
» Ontario institutions advised to stop serving Sure Slice products	In turn, the Ontario Ministry instructed all public health units to contact all hospitals, nursing homes, long-term care homes and seniors' residences in the province and recommend they stop using Maple Leaf Foods Sure Slice brand products (as per Maple Leaf Foods' advisory of August 13 <sup>th</sup> ).
<b>SATURDAY, AUGUST 16<sup>TH</sup></b>	
» The CFIA confirms <i>Listeria monocytogenes</i> in unopened Sure Slice package	The CFIA confirmed a positive test result for <i>Listeria monocytogenes</i> from an unopened Sure Slice package, collected on August 12 <sup>th</sup> , which had been produced at Maple Leaf Foods Bartor Road plant. The CFIA's assessment determined that Sure Slice Roast Beef and Corned Beef met the criteria for the highest level of risk for health which requires recalling the product to protect the public. The CFIA contacted Maple Leaf Foods to inform the company of this result and to advise it that the Agency was preparing to issue a "Health Hazard Alert" for the two specific product codes of Sure Slice products.
<b>SUNDAY, AUGUST 17<sup>TH</sup></b>	
» Public warned not to eat 2 Sure Slice products	At 2 a.m., the CFIA issued a "Health Hazard Alert" warning the public not to consume or serve Sure Slice Roast Beef and Corned Beef. The Alert also stated that the CFIA had not yet been able to link the DNA fingerprints between the human listeriosis cases and the recalled Maple Leaf Foods products.
» <b>1<sup>st</sup> recall of Maple Leaf Foods brand products</b>	At 3:30 a.m., Maple Leaf Foods announced it was voluntarily recalling two Sure Slice brand products sold in 1 kilogram packages.

WHAT HAPPENED	HOW IT HAPPENED
<b>TUESDAY, AUGUST 19<sup>TH</sup></b>	
» <b>2<sup>nd</sup> recall of Maple Leaf Foods brand products</b>	The CFIA issued a second ‘Health Hazard Alert’ warning the public not to consume or serve 23 additional deli meat products from lines 8 and 9 of Maple Leaf Foods Bartor Road plant. This new ‘Health Hazard Alert’ was based on the first results from the sampling blitz conducted in Ontario.
	The CFIA initiated another teleconference with the Public Health Agency of Canada, Health Canada, the Ontario Ministry and Ontario public health units, during which the PHAC continued to coordinate the epidemiological portion of the discussion.
» Toronto Public Health alerts physicians and institutions	Toronto Public Health sent a surveillance alert to physicians and institutions about the outbreak.
<b>WEDNESDAY, AUGUST 20<sup>TH</sup></b>	
» <b>Maple Leaf Foods suspends all production at its Bartor Road plant</b>	Maple Leaf Foods suspended all production at its Bartor Road plant and announced that it was voluntarily recalling the 23 other deli meat products originating from the plant.
» Verification to ensure removal of contaminated products	The CFIA also initiated verification checks, with the assistance of various public health teams across the country, to ensure recalled products had been removed from the market with special emphasis on institutions (hospitals, long-term care homes and day cares).
» Products from Bartor Road held until <i>Listeria</i> test results are negative	The CFIA ordered Maple Leaf Foods to implement a hold and test protocol. This meant that no meat product produced at Maple Leaf Foods Bartor Road would be made available to consumers before test results for <i>Listeria monocytogenes</i> were found to be negative.
<b>THURSDAY, AUGUST 21<sup>ST</sup></b>	
» 18 products test positive - already on recall lists	The CFIA Labs confirmed the 18 Sure Slice products tested following the Ontario sampling blitz were positive and already on the recall lists.
<b>FRIDAY, AUGUST 22<sup>ND</sup></b>	
» Public Health Agency of Canada activates its Emergency Operations Center	The PHAC partially activated its Emergency Operations Center to “Increased Vigilance’ (Level 2)
» 1 <sup>st</sup> federal press conference	Senior executives from the PHAC, the CFIA, and Health Canada held a joint press conference to inform the public of the food safety investigation.

WHAT HAPPENED	HOW IT HAPPENED
<ul style="list-style-type: none"> <li>» <b>1<sup>st</sup> of 21 secondary food recalls</b></li> </ul>	<p>The day also marked the first of a series of secondary recalls – 21 in total. Secondary recalls were required since a variety of foods (e.g. sandwiches, meat and cheese platters, and pizza) were prepared using Maple Leaf Foods deli meats that had been recalled. The new products were sold by different companies under various brand names.</p>
<b>SATURDAY, AUGUST 23<sup>RD</sup></b>	
<ul style="list-style-type: none"> <li>» <b>LINK CONFIRMED BETWEEN HUMAN ILLNESS AND CONTAMINATED DELI MEATS</b></li> </ul>	<p>The test results from the unopened package confirmed the link between the listeriosis outbreak and contaminated products from Maple Leaf Foods Bartor Road plant</p>
<ul style="list-style-type: none"> <li>» <b>3<sup>rd</sup> recall of Maple Leaf Foods brand products</b></li> <li>» 2<sup>nd</sup> Federal press conference confirming the link between listeriosis and Maple Leaf Food products</li> </ul>	<p>The Minister of Agriculture and Agri-Foods, assisted by senior executives of the PHAC, the CFIA, and Health Canada, held a press conference to announce that the DNA fingerprints of the strain of <i>Listeria monocytogenes</i> found in humans and in the Maple Leaf Foods products were linked. This would be the first in a series of fifteen consecutive daily federal media briefings by a Minister. A press release was also issued with the same information.</p>
<ul style="list-style-type: none"> <li>» Maple Leaf Foods CEO takes responsibility for the outbreak</li> <li>» Voluntary recall of all products from Bartor Road</li> </ul>	<p>The Maple Leaf Foods’ CEO broadcast a national network television message taking responsibility for the outbreak following the determination that Maple Leaf Foods’ Bartor Road plant was the source of the contaminated food that caused listeriosis.</p> <p>Maple Leaf Foods also indicated that, as a precaution, it was voluntarily expanding its product recall to include all 191 items produced at the Bartor Road plant. They took a zero risk approach by recalling <b>all products</b> from the marketplace, as they had no means to assure that the contamination at the plant could not have been more dispersed, including products which best before dates had expired but that could have been stored in freezers.</p>
	<p>The CFIA requested a health risk assessment from Health Canada on all products from the Bartor Road plant and notified Maple Leaf Foods that the assessment had been initiated.</p>



WHAT HAPPENED	HOW IT HAPPENED
<b>SUNDAY, AUGUST 24<sup>TH</sup></b>	
» Health Hazard Alert' for all products	The CFIA issued an expanded 'Health Hazard Alert' to cover all products produced at Maple Leaf Foods at Bartor Road.
	Maple Leaf Foods issued a press release confirming its previous day's TV announcement that " <i>[Maple Leaf Foods] voluntarily expanded its recall of products manufactured at its Bartor Road plant in Toronto, as a precautionary measure.</i> "
» Federal Minister of Health holds press conference	The federal Minister of Health held a news conference, assisted by senior executives of the PHAC, the CFIA and Health Canada to respond to questions regarding the listeriosis outbreak and food recall.
<b>MONDAY, AUGUST 25<sup>TH</sup></b>	
» News conference led by Minister of Agriculture and Agri-food; continued daily for 13 days	The Minister of Agriculture and Agri-food Canada resumed the federal lead on the file, holding a news conference assisted by senior executives of the PHAC, the CFIA and Health Canada to respond to media questions.
	From this point forward until the federal election call on September 8 <sup>th</sup> , the federal government held a 4 p.m. daily news conference, led by the Minister of Agriculture and Agri-food Canada, assisted by senior executives from the PHAC, the CFIA and Health Canada, as work continued to identify all illness cases linked to the outbreak as well as all the necessary secondary food recalls.
<b>FRIDAY, SEPTEMBER 5<sup>TH</sup></b>	
» All federally-regulated ready-to-eat meat plants advised of new rules on slicer sanitation	<p>The CFIA issued an advisory on slicers to all federally registered establishments processing ready-to-eat meats. Companies were directed to ensure that meat slicers were completely dismantled and cleaned, that they collected environmental samples to test for <i>Listeria</i>, and to review cleaning and disinfecting procedures with their CFIA inspector to ensure proper sanitation of the slicers.</p> <p>This change led to further <i>Listeria</i> contamination investigations and some product recalls from various food processors later in the fall.</p>

WHAT HAPPENED	HOW IT HAPPENED
<ul style="list-style-type: none"> <li>» Maple Leaf Foods announces results of its panel of International Food Safety Experts review</li> <li>» Slicing machines most likely source of food contamination</li> </ul>	<p>The Maple Leaf Foods' CEO updated the public on the results of the Bartor Road plant investigation by its panel of International Food Safety Experts, indicating that the most likely source of <i>Listeria monocytogenes</i> was contamination in the slicing machines.</p>
<b>SATURDAY, SEPTEMBER 6<sup>TH</sup></b>	
<ul style="list-style-type: none"> <li>» Last federal news conference before election call</li> </ul>	<p>The Minister of Agriculture and Agri-food Canada held the last of fifteen news conferences, assisted by senior executives from the PHAC, the CFIA and Health Canada.</p>
<b>MONDAY, SEPTEMBER 8<sup>TH</sup></b>	
<ul style="list-style-type: none"> <li>» The PHAC back to 'Normal Readiness'</li> </ul>	<p>The PHAC's Emergency Operations Centre was de-activated to 'Normal Readiness' (Level 1).</p>
<b>WEDNESDAY, SEPTEMBER 17<sup>TH</sup></b>	
<ul style="list-style-type: none"> <li>» Bartor Road operations resumed</li> </ul>	<p>Maple Leaf Foods received the CFIA's approval to restart its operations at the Maple Leaf Foods Bartor Road plant. The company's operations had been suspended on August 20<sup>th</sup>. The conditions set by the CFIA to resume production required that all products be tested for <i>Listeria monocytogenes</i> prior to being distributed to market.</p>

**NEXT CHAPTER**

"The previous chapter outlined the chain of events that culminated in the 2008 outbreak. As illustrated in our descriptive chronology, investigating a foodborne illness outbreak is highly complex..."



A magnifying glass with a silver rim and a black handle is positioned over a large pile of white, oval-shaped pills. The pills are scattered and some are in focus through the lens. The background is a light green gradient.

# CHAPTER 7

How well did the federal government and its food safety partners respond to the outbreak?

## How well did the federal government and its food safety partners respond to the outbreak?

The previous chapter outlined the chain of events that culminated in the 2008 outbreak. As illustrated in our descriptive chronology, investigating a foodborne illness outbreak is highly complex. It is necessary to

1. confirm that food is the likely source of the human illness (epidemiological investigation);
2. identify precisely which food product is the cause of the illness and determine when it was commercially produced, using brand names and production codes (food safety investigation);
3. stop its distribution, production and consumption to reduce illness and deaths (recall); and
4. make changes to prevent it from happening again (post-event investigation).

As we have described earlier in the report, the various governments do not regularly work closely together to respond to the outbreak. In this chapter, we provide our conclusions about what worked well and what could be changed to better manage a foodborne emergency.

## UNDERSTANDING THE CHALLENGES OF MANAGING A FOODBORNE EMERGENCY

To understand what worked and what did not, we first need to explain the key challenges in managing a foodborne outbreak. Such a crisis brings together multiple jurisdictions and two sectors of the federal government that, on a day-to-day basis are not required to work closely together: the public health and food safety sectors. At the provincial level, in most provinces,

food safety is a direct responsibility of public health through environmental health inspection.

Even though both sectors focus on human health and safety, the daily work of those in the food sector is to monitor the processes keeping food safe free from harmful agents. The public health sector monitors disease occurrence to make sure those processes have worked. Staffs working in these areas approach an outbreak from different perspectives; their education, training and experience are complementary.

When an outbreak is viewed through the lens of public health, the focus is primarily on identifying what is making people ill. Consequently, the sector works to quickly determine the likely cause of the illness and remove this threat as rapidly as possible.

In an outbreak, the primary function of public health in such events is ‘forensic’ – assisting the food safety sector in rapidly identifying the food source so it can stop its distribution and consumption. This role is an important one, especially given the long incubation period of *Listeria*.

The food safety sector is focused primarily on identifying the exact food product that is causing the illness so that the correct food is removed from the market. This is not always easy, given that food distribution is less often local as consumers now have access to food products from all over the world. In the 2008 outbreak, contaminated deli meats from a single plant in Ontario that produces dozens of brands and products were distributed all across the country, resulting in a national outbreak. For this reason, it was essential to match the location of the people who were ill with the distribution patterns of the food products. This made the food safety investigation both a time-consuming and complex task.

Once the suspected food source was identified, even though it was not yet confirmed, public health officials assumed it was the food safety sector’s responsibility to lead and that their role was to provide support. This view ran counter to public perception that the outbreak was primarily a health matter.

During the 2008 outbreak, the differing perspectives of who

### Dr. Brian Evans

“I think consumers’ confidence is shaken. We have an obligation to do everything humanly possible to restore, to the extent that we can restore, public confidence. We have to earn it every day. Every day we’ve got to go out and re-earn that and we have to be able to communicate a lot better with the public than we have.”

» DR. BRIAN EVANS  
EXECUTIVE VICE-PRESIDENT, CFIA  
FROM OUR INTERVIEWS

should lead were evident. From our observations, while the food safety sector assumed leadership in recalling the contaminated food products, other elements of the emergency that required attention were slow to get underway (e.g. the overall coordination of all involved in managing the outbreak and communications to the public).

Nonetheless, it is important to note that, due to the long incubation period of *Listeria monocytogenes*, much of the damage had already been done. We verified that, by the time the outbreak was detected, most of the individuals who became ill had already been exposed to the bacteria. So, while our report proposes improvements that could lead to a quicker and more efficient response in the event of another outbreak, little could have been done at the time of the 2008 outbreak to prevent others from becoming ill.

We believe that by being proactive - for example, advising the public sooner that certain foods were suspected - governments could have averted confusion during repeated recalls of deli meats. This ultimately amounted to the recall of 191 products from Maple Leaf Foods Bartor Road plant, many of which had been on the market for months. This confusion affected public confidence in Canada's food safety system and in governments' capacity to respond to such foodborne emergencies.

To explain our conclusions we have broken down the different issues under the following headings:

- » Leadership
- » Emergency Management
  - » Federal, provincial/territorial and local coordination
  - » Federal organizations structures and operating procedures
  - » Disease reporting
  - » Epidemiological investigation
  - » Food investigation and recall
  - » Laboratories

## LEADERSHIP

The 2008 outbreak clearly demonstrated that managing this type of emergency was not only complicated but was also not well understood by those involved.

At the outset, the outbreak was not considered a severe foodborne emergency. This view led to a void in leadership in managing the crisis. It took close to three weeks before senior executives in all key organizations became fully engaged in the event. The fact that many officials were on vacation during this period has

been offered as one explanation for the slow response.

This should not have posed a problem, at least in theory, since an intergovernmental agreement - the **Foodborne Illness Outbreak Response Protocol (FIORP)** - had been endorsed by all federal, provincial and territorial governments in 2004 to coordinate the management of a foodborne emergency. Put into place following a national foodborne outbreak in 1999, FIORP was designed to guide a multi-jurisdictional response when such an emergency arose.

However, few of those involved in the 2008 outbreak, especially senior executives, were familiar with FIORP. Even fewer acted in accordance with the multi-jurisdictional guidelines to manage such an event.

Through interviews we learned that, within the Canadian Food Inspection Agency, the Public Health Agency of Canada, Health Canada and the Ontario Ministry, few officials above the Director level (the management level charged with administering the protocol when required) were aware of FIORP's existence when first alerted to the unfolding listeriosis crisis.

We were told that while front line and scientific staff on both the public health and food safety sides of the investigation were hard at work responding to the crisis, their superiors were not initially fully engaged.

### Listeriosis

Prior to 2005, there were less than one hundred cases of listeriosis reported in Canada annually. However, since 2005 this number has more than doubled.



“It is one thing to have protocols in place but if everyone doesn’t act in accordance with them or they’re not aware of their roles, they are not effective protocols.”

» DR. BRIAN EVANS, EXECUTIVE VICE-PRESIDENT, CFIA  
FROM OUR INTERVIEWS

Furthermore, no single organization took the overall role of coordinating the actions of the various parties involved. This left a vacuum in senior leadership that caused confusion and weak decision-making. Despite this, the epidemiological and food safety investigations were reasonably well done.

## KEY FINDINGS

- » National foodborne outbreaks are rare in Canada. Nevertheless, agreements are in place to manage such events but they were not widely known or understood by senior leadership at the time of the 2008 outbreak.
- » In Ontario, although field staff was at work, senior public health executives did not become engaged in the event until the week of August 11, three and half weeks after the investigation was initiated.
- » Within the responsible federal organizations, although staff was at work, senior executives did not become engaged until the week of August 18, after the first recall.
- » The public health and food safety sectors come at foodborne emergencies from different perspectives. This, coupled with the infrequent occurrence of such

emergencies, compounded the challenges in managing such a crisis.

## RECOMMENDATION

**23. The Public Health Agency of Canada, with the support of the Canadian Food Inspection Agency and Health Canada, should assume the leading role in coordinating the federal government’s response to a national foodborne emergency.**

## EMERGENCY MANAGEMENT

Emergency management of a foodborne illness outbreak requires clear and concise planning, including:

- » the determination of roles and responsibilities
- » the timing and processes for interaction; and
- » exchange of information

Since national foodborne illness outbreaks of this magnitude are rare in Canada, opportunities to practice this emergency management approach are very limited. As a result, the system is not mature. We learned that both food safety and public health officials participating in the 2008 outbreak were not adequately prepared or equipped to properly

manage this event. This lack of advance preparation, particularly in communicating to vulnerable groups, contributed to confusion.

## FEDERAL, PROVINCIAL/ TERRITORIAL AND LOCAL COORDINATION

The *Foodborne Illness Outbreak Response Protocol* has been ratified by Deputy Ministers for all fourteen jurisdictions, although not by Ministers of Health. To complement the protocol, bilateral agreements have been signed between the federal and provincial or territorial governments to recognize the particular circumstances of each jurisdiction.

We heard that this protocol is valuable, but it is rarely needed nor fully understood by many of its signatories. We also heard that elements of the protocol are out of date.

In spite of having formal intergovernmental agreements to work collaboratively and share information in times of emergency, the events of the 2008 outbreak revealed that, at the time they were most needed, they were not fully used. Since the emergency provisions were not invoked the conference calls although helpful were informal. For example, the continuity between calls was not fully captured as minutes were not taken at any point in the management of the event. Several people with first-hand knowledge of these events reported that crucial

## Dr. David Butler-Jones

“The “Public Health Agency of Canada” was formed in large part in response to the report of Dr. David Naylor, “Learning from SARS.” In particular, Dr. Naylor discussed the need for fulfilling the four Cs n collaboration, communication, cooperation and clarity n which I think is a pretty good description of what this new Agency and myself should strive for.”

» DR. DAVID BUTLER-JONES  
CHIEF PUBLIC HEALTH OFFICER OF CANADA, TO THE STANDING COMMITTEE ON HEALTH, OCTOBER 2004

information was circulated but not moved up the chain of command.

We heard repeatedly that the roles and responsibilities of various governments need to be clarified and better communicated. ‘Lessons learned’ reports prepared by all of the organizations involved in the outbreak came to similar conclusions.

The unusual characteristics of a listeriosis outbreak underscore the need for maximum collaboration.

When a listeriosis crisis emerges, it starts with just a few people from specific groups becoming ill. Since each person will develop the illness at a different rate (the incubation period varies from 3 to 70 days), each case is different. It is only when an increase in cases or unusual factors are noticed that local public health officers start

investigating, as occasional cases are the norm. This is what happened in the 2008 outbreak, when two people from the same long term care home developed listeriosis a few days apart.

When the number of cases grows beyond a local health unit the provincial or territorial ministry gets involved. And when the number of cases extends beyond one province, the federal public health sector gets involved. At any point in this process when a food product is suspected, the provincial or federal organizations responsible for food safety are called in.

For example, the 2008 outbreak quickly expanded from a small number of cases in Ontario to, eventually, 57 cases across seven provinces. This complicated communications and management of the event. The lack

of a clear understanding of which organization or level of government was responsible for doing what – including what organization should lead the crisis – contributed to the inconsistent management of the outbreak.

One of the goals in creating the Public Health Agency of Canada was to avoid just such situations, which Canada had learned when confronted with SARS. We are convinced that strong national leadership for foodborne emergencies is required as a national priority. We conclude that the PHAC is the organization best placed to take on this role.

## KEY FINDINGS

- » The long incubation period of listeriosis, combined with the large number of individual public health units reporting isolated cases across Ontario, meant that the small increase in cases was hard to identify.
- » There were strong indications as early as July 29th that a foodborne illness emergency was developing. Fifteen of Ontario’s local public health units reported 24 cases of listeriosis when only 11 would normally be expected for the time period, which was confirmed in a national alert to all provincial, territorial and local health authorities across Canada.

## Dr. David Williams

“We have different organizations involved, so if we can just get it better coordinated and clearer lines of authority and responsibility, so that at an outbreak or a suspicion of outbreak, the public’s protection is paramount.”

» DR. DAVID WILLIAMS  
ACTING CHIEF MEDICAL OFFICER OF ONTARIO  
FROM OUR INTERVIEWS

- » There is a need to pre-determine how governments will interact and to coordinate the interventions of the different organizations.
- » FIORP, which is in need of updating, was not recognized as the protocol to be used during the outbreak to avoid duplication or to fill gaps and was not well recognized or understood by many federal/provincial/territorial officials.
- » Based on our investigation, to maintain confidence in the food safety system, there is a need for independent review after all national foodborne emergencies, in addition to each organization's lessons learned review.

- national (multi-provincial/territorial) and the federal (multi-departmental) level;*
- ii. use a common incident command structure;*
- iii. define the roles and responsibilities of each of the organizations involved clearly and concisely, in plain, unambiguous language including surge capacity;*
- iv. increase the use and timing of health advisories and precautionary warnings, where reasonable and probable grounds exist, to advise consumers to suspend consumption of suspected foods while tests to confirm the precise source are pending, taking into account*
  - » suspected illnesses and deaths,*
  - » geographic distribution, and*
  - » test results of opened or unopened food samples.*
- v. create a ready-to-implement crisis communications plan to ensure that all Canadians are kept informed in a timely and detailed manner (including pre-arranged media spots, pre-developed material, and the like); and*

- vi. share all information, including epidemiological data, needed to identify the emergency taking into account privacy and data confidentiality issues;*
- c. include in FIORP periodic mock exercises to validate that the protocol and its Emergency Plan are fully understood by federal, provincial, territorial and local governments as well as by the food processing and distribution industry and is in a state of readiness.*

## RECOMMENDATIONS

### **24. In preparedness for national foodborne emergencies, the federal, provincial and territorial governments should:**

- a. complete the revision of the Foodborne Illness Outbreak Response Protocol (FIORP) currently underway, at the earliest opportunity; and*
- b. enhance FIORP, by developing and ratifying a Foodborne Illness Emergency Plan building on the experience of the Canadian Pandemic Influenza Plan, to:*
  - i. designate the Public Health Agency of Canada as the lead Agency taking leadership at both the*

**25. The authority of the federal Minister of Health to protect the health of all Canadians under section 30.1 of the *Food and Drugs Act*, and subsections 4(1) and (2) of the *Department of Health Act* should be used in a national foodborne emergency, whenever warranted.**

**26. Where human deaths or serious illnesses have occurred, the Canadian Food Inspection Agency should promptly disclose the results of its investigation of the implicated plant and the corrective actions taken, to the public and food safety partners.**

**27. The federal government should establish an independent post-event review process made up of**

### Something we heard during our interviews

The federal organizations have initiated discussions to improve FIORP, and some of the enhancements considered have been exercised during the health emergency of H1N1.

Ronald L. Doering

“No function is more important than the management of these high profile cases.  
No activity is so central to the credibility of the CFIA.”

» RONALD L. DOERING  
FORMER PRESIDENT OF THE CANADIAN FOOD INSPECTION AGENCY

**a pre-identified team of experts not involved in the emergency. Following all future national foodborne emergencies, this team should conduct an in-depth review and report to the government. The report should be made public.**

## FEDERAL ORGANIZATIONS' STRUCTURES AND OPERATING PROCEDURES

Beyond difficulties in federal, provincial/territorial and local coordination, we observed problems specific to the three federal organizations directly involved in the 2008 outbreak. Some of these problems were identified in the lessons learned reports prepared by the Public Health Agency of Canada, the CFIA and Health Canada.

### PUBLIC HEALTH AGENCY OF CANADA

The Public Health Agency of Canada was initially pulled in to the 2008 outbreak on July 29<sup>th</sup> through the foodborne epidemiological team. On August 22<sup>nd</sup>, the team partially activated the Agency's Emergency Operations Centre to 'Increased Vigilance' (Level 2). However, we heard it did not activate all the functions called for in the

Agency's emergency plan. For example, no one was assigned to undertake the advance planning required to manage the outbreak, nor was a specific communications team established. While the PHAC personnel recognized the severity of the outbreak, their resources were not fully deployed to respond in an emergency situation.

### CANADIAN FOOD INSPECTION AGENCY

The CFIA recall team was first made aware of the emerging outbreak and the suspected food source on August 6<sup>th</sup>. Senior executives were advised the next day, but were not fully involved in decision-making until the week of August 18<sup>th</sup>, after the first recall took place. This means that key decision makers who could have helped with the strategic management of the crisis were not involved. In the past, the Agency used an emergency management structure that engaged all critical senior personnel and technical resources to deal with significant food inspection events. This process was not used during the 2008 outbreak since the Agency did not foresee the magnitude of the outbreak early enough. In addition, the CFIA did not activate its Incident

Command Structure, which is designed to coordinate this type of situation.

## HEALTH CANADA

When the CFIA receives confirmation that a particular food product is contaminated, it calls on Health Canada to evaluate the risk this food poses to the health of consumers based on the potential exposure to the bacterium and the severity of its impact. We learned that the department's team assigned to this task in the summer of 2008 was not operating on a 24/7 basis, leaving gaps in coverage during emergency response situations.

### KEY FINDING

» The Public Health Agency of Canada did not consider it had the federal leadership role, therefore there was a delay in identifying the outbreak as a public health emergency and it only activated its Emergency Operations Centre, which served as the coordination hub for the Agency and Health Canada, in late August

### RECOMMENDATION

**28. In the event of a national foodborne emergency, an incident command structure should be activated under the leadership of the Public Health Agency of Canada with the direct participation of the Canadian Food Inspection Agency and Health Canada.**

## DISEASE REPORTING

Although there were gaps in reporting requirements for listeriosis, we have been advised it would not have made a difference in the 2008 outbreak, since listeriosis was already a notifiable disease in Ontario when the outbreak was first identified. There are currently 55 active diseases or conditions on the National Notifiable Diseases List<sup>1</sup>. Including a disease on the list means that, when provincial/territorial public health authorities (local and regional report to their province/territory) are able to confirm that someone has a listed illness, they voluntarily report the case(s) to the PHAC.

Listeriosis was a nationally notifiable disease from 1990 following the 1982 outbreak of *Listeria* in ready-to-eat coleslaw salad. However, since there were no significant outbreaks between 1990 and the events of 2008, it was removed from the list in 1999. At the time of the outbreak, listeriosis was not a notifiable disease in many provinces. The doubling in listeriosis cases since 2005, and the fact that it is now in the process of becoming a national notifiable disease, reflects the growing awareness that the disease is a significant health threat for vulnerable populations. The process is underway

of once again identifying listeriosis as a national notifiable disease.

## EPIDEMIOLOGICAL INVESTIGATION

In July, the Ontario Ministry of Health and Long-Term Care began to identify an increase in the number of listeriosis cases that were being reported by local public health units through Ontario's electronic surveillance system. With the help of one of its analysis systems<sup>2</sup> the Ontario Ministry was able to statistically validate that something unusual was occurring. Officials in the Ontario Ministry began contacting both public health units, the Public Health Agency of Canada and Health Canada to discuss these findings.

A notice was posted on the national surveillance system on July 29<sup>th</sup> to alert other jurisdictions to the increase in cases occurring in Ontario. Within a few days, the federal-provincial epidemiological team, which was communicating daily via conference calls and postings on the national surveillance system, learned of a potential link between one of the listeriosis cases and a food source. Over the next few days, there were several new cases reported with possible links to a similar food source.

By August 6<sup>th</sup>, the daily conference calls included officials from the CFIA

who were brought in to investigate the source of the contaminated food. This food investigation eventually led to the confirmation of the food source and the associated food product recalls (three main and 21 secondary recalls), which are discussed in the next section in more detail.

While progress on the recall was being made, efforts to link the food source and cases of listeriosis across the country were just beginning. DNA fingerprinting of the food source enabled public health teams to refine their analyses of listeriosis cases occurring within their jurisdictions. Eventually, they were able to match the cases of illness with the consumption of contaminated products from Maple Leaf Foods.

This was a significant accomplishment and a reflection of the increasingly important role technology, such as DNA fingerprinting, plays in identifying foodborne illnesses. As recently as five years ago, foodborne diseases were not easily linked to a specific food product.

Thanks to the use of a test known as pulsed-field gel electrophoresis (PFGE), it is now possible to link human cases more quickly by comparing DNA fingerprints. Similarly, this technology can link human cases and the foods that caused the illnesses.

<sup>1</sup> Public Health Agency of Canada - National Notifiable Diseases (1: Current List of Nationally Notifiable Diseases and Year the First Positive Report was Recorded) - online: [http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/list\\_e.html#tab1](http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/list_e.html#tab1)

<sup>2</sup> The Early Aberration Reporting System is a system that detects statistical increases in the number of cases above the norm and therefore can help public health officials detect an outbreak.



## FOOD INVESTIGATION AND RECALL

Foodborne illness outbreaks that are traced back to a commercial production source are rare. According to US data, up to 97% of foodborne illnesses result from the handling or preparation of food once it has left the food processing plant. In such cases, investigating the food source of the illnesses is less complicated. Such investigations are led by public health officials and do not often involve the food safety sector.

However, in the remaining two to three percent of cases, a food safety investigation is required because the cause of the outbreak is not evident. Several different organizations become involved in this type of investigation. Public health teams identify the cause of the illness while the CFIA tracks down the product that is causing it. Health Canada provides an assessment of the risk associated with the contaminant, the exposure of humans and the risks to peoples' health.

In the 2008 outbreak, the CFIA was notified by Toronto Public Health that three samples of deli meats tested positive for *Listeria monocytogenes*. The CFIA initiated a food safety investigation to determine the exact food product, its source, production date and code. In the course of Toronto Public Health's epidemiological investigation, which involved collecting a variety of food samples, they were advised by the

Toronto area long term care home staff that the likely source of the food product was Maple Leaf Foods. The company produced the larger packages of deli meats which both of the home's ill residents had eaten. The food samples initially collected by Toronto Public Health were from 'retention' samples of meals that had been served to the residents earlier in July. Long-term care homes, hospitals and other large institutions keep samples for this purpose.

The original packages containing the deli meats had long been discarded by the time the CFIA became involved in the investigation. This was understandable, as the time between the original collection of the food samples and confirmation of positive results from the lab spanned three weeks. Access to the original packages was essential to pinpoint the information required to identify the precise product and production date.

As part of the food safety investigation, the CFIA investigators had to methodically sort out the following:

- » Some local public health units in Ontario did not immediately enter their listeriosis cases in the provincial surveillance system therefore when provincial authorities first checked, nothing appeared to be out of the ordinary.
- » Early reports from one of the national surveillance systems

did not indicate a clustering of illnesses in Ontario.

- » There was contradictory information concerning the exposure of patients to Maple Leaf Foods products in the case of a hospital in Burlington, Ontario. At first, patients were reported as not having eaten meals prepared with deli meats although they, in fact, had.
- » Maple Leaf Foods did not initially report the presence of *Listeria* at the Bartor Road plant or provide product distribution records.

As Ontario public health units undertook investigations into cases in their jurisdictions, a pattern linking Maple Leaf Foods deli meat products to ill individuals started to emerge. We were told that, as their investigations progressed, some public health officials believed that sufficient information was available to proceed with a recall of these food products.

There are differing views about when to advise the public about potential food contamination. Some advocate for a precautionary approach, based on epidemiological evidence, to protect the public from potential harm. Put simply, this means that, in the absence of absolute certainty, it is better to err on the side of caution, using reasonable and probable grounds.

There are numerous examples of food recalls by the federal government that have been undertaken without



the definitive proof established by laboratory confirmation. However, in those instances, all the evidence pointed toward the same food product.

The other approach is to wait for more conclusive evidence, before alerting the public to a health threat. The practice usually followed by Health Canada, based on the recommendation of the World Health Organization and years of experience is to, wherever possible, rely on laboratory confirmation before recommending a recall of specific food products.

Laboratory confirmation is based on extensive testing and conclusive results that provide proof that a specific food product is contaminated. This is often referred to as the ‘unopened packages’ approach.

Health Canada has relied on this standard of proof, which provides evidence that the product was

### Salmonella Saint Paul Outbreak, 2008

- At least 1400 persons infected with Salmonella
- Initial investigation incorrectly identified tomatoes as source of contamination; jalapeno peppers were true source.
- Premature national public health warnings not to consume tomatoes.
- Recall of peppers was delayed which allowed peppers to remain a threat to public health.
- Undermined consumer confidence in safety of fresh produce and food safety system.

#### WHAT WAS LEARNED?

- Improved safety standards needed for fresh produce
- Food safety/public health response needs to improve outbreak investigation methods - more accurate
- Public health communication to media and public needs to be responsive, clear, and accurate (better to be a little slower but accurate).

contaminated during the production stage and not cross-contaminated after leaving the plant or while being handled in consumers’ kitchens.

The quality of the information is crucial to identify the correct food in order to ensure the real contaminated

product is removed from the marketplace.

In the 2008 outbreak, the early findings were not converging or conclusive. Although there were indications the product originated at Maple Leaf Foods, there was no conclusive information on the specific food or its production dates. Therefore, the CFIA investigators sought unopened packages of the same product, which were eventually found and tested positive for *Listeria monocytogenes*.

Based on this confirmation, Maple Leaf Foods undertook a voluntary recall of two specific brands of Sure Slice Roast Beef and Corned Beef.

Following the confirmation of the source, the epidemiological investigation broadened. It quickly identified and linked other cases associated with the outbreak. As the investigation continued, two additional recalls of Maple Leaf Foods

### Salmonella Peanut Butter Recall 2008-09

- One of the largest recalls in American history
- Salmonella-tainted peanut butter from one Georgia company distributed throughout U.S
- Approximately 700 people ill (1 in 4 hospitalized); 9 deaths; almost 400 products recalled (and growing)
- Company shipped contaminated products after knowing tests for Salmonella were positive; difficulty in identifying product distribution (traceability)

#### WHAT WAS LEARNED?

- Responsible collaboration between government and producers is essential - companies must notify government when pathogens identified in their food products
- Retailers must know their suppliers so that contaminated products can be pulled off market quickly, with accuracy
- Congress learns of corporate failure to distribute safe food: pledges to make major changes to protect nation’s food supply

## Sampling Procedures and Information

### World Health Organization

If a packaged food item is suspected of being the cause of a foodborne illness, it is particularly important to collect unopened packages of that food—ideally from the same lot.

This can help to establish the stage of production when the food was contaminated before the package is handled or opened and its contents are used in meal preparation.

Samples should be accompanied by product information such as the circumstances in which samples were collected, the names of the suppliers and distributors, and coding information on packaged foods should be recorded. This facilitates the determination of the distribution channels of the product.

Source: *Foodborne Disease Outbreak: Guidelines for Investigation and Control*. 2008

products took place, followed by 21 secondary recalls. Secondary recalls were necessary since a variety of food products (e.g. sandwiches, meat and cheese platters, pizza) were prepared using Maple Leaf Foods deli meat products that had been recalled. These products were packaged and sold by different companies under various brand names.

Following each of the 24 product recalls, it was necessary to verify that all the contaminated products had been removed from the marketplace. It was also important to ensure they were not continuing to be served in institutions especially those caring for vulnerable populations.

In total, over 29,000 verification checks post-recall were carried out over a three week period by the CFIA staff and local public health inspectors from across the country. This put a tremendous strain on all involved and disrupted their efforts

in conducting their normal duties. We have learned that, while these activities were necessary, there was very little information circulating which would have helped the public health officials to better understand why they were being asked to repeatedly visit the same facilities. During these events, more information was needed on the reasons behind the successive secondary recalls.

### KEY FINDINGS

- » Considering that contaminated food was being consumed for some weeks prior to the initiation of the investigation, the work performed by epidemiological and food safety teams contributed to identifying the source of the illness and removing contaminated food from the marketplace
- » Although there were some problems, regular conference calls which started in Ontario and expanded to eventually include

federal organizations and other provinces assisted in determining the magnitude of the foodborne emergency and advancing the investigation

- » The differences in perspectives regarding the quality and strength of evidence on which to base recall decisions, including timing, support the need for advance agreement across sectors and levels of government to improve the management of future similar investigations
- » Information and the supporting rationale, provided to public health officials by the CFIA that were assisting with verification checks following product recalls, was insufficient

### RECOMMENDATIONS

- 29. Health Canada, the Canadian Food Inspection Agency and the Public Health Agency of Canada should review, update and publish the criteria for proceeding with a food recall to ensure that the weight of evidence takes into account epidemiological information, including suspected illnesses and deaths, geographic distribution, and food sample test results whether packages are opened or unopened.**
- 30. The Canadian Food Inspection Agency should encourage**

**federally regulated meat processors to move beyond the minimum existing requirement for accessibility of distribution records to include electronic access in non-proprietary and unlocked formats to assist in potential product recalls.**

- 31. The Canadian Food Inspection Agency should establish a formal protocol to ensure that timely and consistent information is provided to staff of the provincial/territorial or local public health organizations who are asked by the Agency to help it complete post-recall verification activities.**
- 32. In providing information related to a given product recall to the distribution industry, including grocers, the Canadian Food Inspection Agency should use a standardized form (as suggested by the Canadian Council of Grocery Distributors).**

## LABORATORIES

The listeriosis outbreak revealed gaps in the laboratory system that contributed to delays in detecting the disease and in notifying the public.

In health emergencies, human biological samples and the follow-up test results may be circulated between private and hospital labs as well as both provincial and federal public health laboratories. This complex system of human biological

### Testing for *Listeria*

The following tests are used to find out if a food is contaminated with *Listeria*:

- a. 'Quick test': indicates if one (or more) of the six *Listeria* types is present (3 to 4 days)
- b. Detection: indicates whether or not the bacteria is present - there are tests for *Listeria* species and for *Listeria monocytogenes* (7 to 10 days)
- c. Counts: used to complement the detection test to indicate the quantity of bacteria present (4 days)
- d. Serotyping: a follow-up test to compare different strains (e.g.: from 2 different packages of food) to see if they are the same (2 to 4 days)
- e. DNA 'fingerprinting': another follow-up test to determine the strain of *Listeria monocytogenes*. Not as good as fingerprinting on people - but a good way to match *Listeria monocytogenes* from 2 different food or human samples (4 to 6 days; if urgent 3 days)

laboratories was not fully networked at the time of the 2008 outbreak and not all provincial or federal laboratories were accredited to test for *Listeria monocytogenes*.

Furthermore, we learned that there are only a few laboratories with the capacity and certification to test food products for *Listeria monocytogenes*, and none of those were networked. We have also learned that many provinces did not have the capacity to test for *Listeria* and relied on Health Canada's National Reference Laboratory to test their food samples during investigations. As a result, opportunities may have been missed to confirm the food source of the outbreak sooner.

We heard from many interviewees that methods to collect and retain food samples as well as testing methodologies are not standardized.

There is also no cross-coding<sup>3</sup> of the human biological samples and corresponding food samples. Consequently, more time was needed to reconcile results. This could have been avoided with pre-approved processes and practices.

Another complication was that current confirmation testing for *Listeria monocytogenes* and the DNA fingerprinting involves a series of tests. It can take up to 14 days to complete all these tests before identifying the fingerprint of the bacteria.

Due to all of these factors, we consider that there might have been earlier opportunities to identify the link between the human infection and the food source of the outbreak.

<sup>3</sup> Cross-coding: a method of identifying human samples and corresponding food samples to make it easier to link their test results

## Dr Frank Plummer

“What we can do to make that better is decentralize to the provinces, which we’ve already started to do. ... That will take a bit of time off the time it takes to detect cases – a few days, three or four maybe – but it will improve the system.”

» DR FRANK PLUMMER  
SCIENTIFIC DIRECTOR GENERAL, NATIONAL  
MICROBIOLOGY LABORATORY  
PUBLIC HEALTH AGENCY OF CANADA

### KEY FINDINGS

- » All foodborne illness emergencies require extensive laboratory testing and analysis. Both human and food samples are required to link the disease to the contaminated food products.
- » Public health labs are not formally networked and could be more effectively used during a foodborne illness emergency.
- » The Public Health Agency of Canada has improved its epidemiological data collection and analysis for

## Dr Mansell Griffith

“Research is needed to develop rapid, inexpensive and easy-to-use methods to detect *Listeria* in the environment and in food that can be completed within a working day.”

» DR MANSELL GRIFFITH  
CHAIR OF DAIRY MICROBIOLOGY  
IN THE FOOD SCIENCE DEPARTMENT  
AT THE UNIVERSITY OF GUELPH  
MEMBER OF THE LISTERIOSIS INVESTIGATION  
EXPERT ADVISORY GROUP

human illness, but improvements are still required for integrating the data collection and analysis of food samples.

- » In the case of *Listeria*, laboratory resources are limited and the testing required is sophisticated, complex and takes considerable time to properly undertake (up to 10 to 14 days to confirm *Listeria monocytogenes* in food).
- » Advances in laboratory testing allow for DNA fingerprinting of the *Listeria monocytogenes* bacteria, which is used to confirm the linkage between human illness and contaminated food products.
- » While significant progress has been made, enhanced coordination of testing could further accelerate the analysis and decision-making necessary in the management of foodborne outbreaks.

### RECOMMENDATIONS

- 33. Given that laboratories across Canada are not networked, the federal, provincial and territorial governments should proceed to establish a nationally integrated network (i.e. network of networks) among the following:**
- a. *human disease labs (where this has not yet occurred),*
  - b. *food labs,*
  - c. *animal labs, and*
  - d. *all of the above.*

- 34. This network of federal, provincial, territorial, local, and private laboratories should be integrated to ensure:**

- a. *rapid tests, analysis and reporting of test results into monitoring and surveillance systems, on a priority basis; and,*
- b. *the identification of back-up capacity to support regional and local gaps and surge capacity needs during a national foodborne emergency.*

- 35. Federal, provincial and territorial governments should review laboratory procedures and methodologies to develop consistent practices in testing for foodborne diseases, against predetermined benchmarks and giving priority to the following:**
- a. *cross-coding human samples and corresponding food*

### Suggestion

“Laboratory testing needs to be improved so there is either centralized or standardized testing for foodborne bacteria to avoid confusion over lab results. In addition, all health care institutions and emergency personnel should have computer access to patients’ health records.”

» A SUGGESTION BY A FAMILY  
AFFECTED BY THE OUTBREAK

- samples in order to accelerate the linkage of test results;*
- b. agreeing to protocols designed to accelerate the process for accrediting public (by the federal government) and private (by the provinces) laboratories for Listeria monocytogenes DNA fingerprinting;*
  - c. standardizing methodologies for the collection and retention of food samples, including the requirement that all Listeria monocytogenes positive food isolates be forwarded to a designated lab for DNA fingerprinting;*
  - d. developing and delivering the necessary training required to ensure that laboratories have built-in human resources redundancy;*
  - e. ensuring that positive Listeria monocytogenes isolates are held for at least six (6) months to facilitate the comparison of data and to accelerate the identification of potential outbreaks, and*
  - f. researching and applying novel and emerging lab technologies.*

**36. Federal, provincial and territorial governments and their research funding agencies should initiate and support further research into:**

- a. testing for, and control of, Listeria monocytogenes;*
- b. improved traceability technology and methodology; and*
- c. novel and emerging laboratory technologies.*

**NEXT CHAPTER**

“From everything we heard, if there is a single issue that garnered near unanimous agreement, it is that the public was confused and did not understand what they should be doing following news of the food recalls...”



# CHAPTER 8

How well were communications handled?

## Communications to the public

From everything we heard, if there is a single issue that garnered near unanimous agreement, it is that the public was confused and did not understand what they should be doing following news of the food recalls. This is not surprising, considering the complexity of the issues involved in the outbreak and the many organizations providing varying levels of information at different points in the event.



## Something we heard during our interviews:

There is lack of clarity on who is responsible to communicate with vulnerable populations on food safety issues.

The Ontario and federal governments, other provinces, and Maple Leaf Foods were each making formal news announcements with different rates of frequency. Many others voiced their opinions about the outbreak and the way it was being handled in media reports. Over the course of several weeks, official government spokespersons, public health and food safety experts, politicians, unions, and consumer groups were interviewed frequently. The very fact that there were so many different organizations making so many statements contributed to Canadians' misunderstanding and anxiety.

Canadians generally do not understand which level of government, let alone what organization, has specific jurisdictional responsibility for public health or food safety. What they do know is that they want someone to explain to them, simply and clearly, what is happening and what they should be doing to protect themselves.

Subsequent public opinion polling, along with the personal anecdotes of family members and others who shared their views with us during this investigation, indicated that communications about the outbreak did not provide the information they needed.

## OBSERVATIONS AND ASSESSMENT

If measured by the level of activity, hours worked and sheer number of information products generated by communications staff at the Canadian Food Inspection Agency, the Public Health Agency of Canada, and Health Canada, it would seem that communications to the public were effective. However, we heard that more needs to be done to better meet Canadians' information needs during a foodborne emergency.

Initial media reports on the listeriosis outbreak focussed on the facts, closely reflecting the statements and key messages issued by the Canadian Food Inspection Agency, the Public Health Agency of Canada and provincial spokespersons. Coverage provided basic information about health risks, as well as how health authorities were managing the outbreak. As time went on, however, the federal response to the emergency and, more generally,

its food safety inspection practices became the subject of critical media reporting. Indeed, the tone changed rapidly and dramatically.

After the first few days of coverage, news stories routinely reported concerns from worried consumers and criticisms from prominent health and food experts. The public discourse shifted from an emphasis on the specifics of the threat to Canadians' health to questions about the Canadian food system and whether it was an (inhibiting) or a (contributing) factor to the outbreak.

Other factors helped shape the nature of the coverage and influenced the debate. Ongoing discussions between the CFIA and its unions (the Public Service Alliance of Canada and the Professional Institute of the Public Service of Canada) meant that issues at the labour relations forum, especially related to staffing levels and jobs duties, became newsworthy. Media focused on these issues through the prism of the performance of food inspection before and during the outbreak.

Similarly, the fact that the outbreak occurred during the period leading up

### Dr. K. Wilson

"The outbreak crossed over two areas - food safety and public health - and had political repercussions, given the presence of the federal election."

» DR. K. WILSON  
CANADA RESEARCH CHAIR, PUBLIC HEALTH POLICY  
UNIVERSITY OF OTTAWA  
APPEARING BEFORE THE AGRICULTURE SUBCOMMITTEE ON FOOD SAFETY  
JUNE 10, 2009

to a federal general election, and then during the campaign itself, played a role in how the outbreak was covered by the media.

While these contextual factors can have an impact on media coverage and public attitudes about an issue as serious as a listeriosis outbreak, examining the actual communications activities of the federal government during this period is important to determine if there are changes that could be made that would lead to more effective communications to the public.

We measured the effectiveness of the federal government in communicating to the public against the key objectives and the federal approach to risk communications in an emergency situation, described in the 2006 *Strategic Risk Communications Framework and Handbook*.

The Government of Canada's efforts were partially successful in achieving the objectives of risk communications. While communications staff demonstrated commitment, federal communications efforts during the outbreak did not consistently meet the level of performance the situation demanded. This diminished the government's ability to inform and reassure an anxious public. In fact, the performance itself became part of the story, thereby further impairing the effectiveness of the government's communication efforts.

## Communications Risk Strategy

The 2006 *Strategic Risk Communications Framework and Handbook* adopted by Health Canada and the PHAC defines risk communications as "any exchange of information concerning the existence, nature, risk, form, severity or acceptability of health or environmental risks".

Ultimately, effective risk communications by government should influence decisions and behaviours. In a period of health emergency, its key purposes are twofold:

- First, it should allay concerns of the public; and,
- Second, it should provide timely and accurate guidance on steps members of the public should take to protect themselves and mitigate the risks associated with the illness.

This was due not to a major or systemic failure of the communications function, but rather to a series of substantive factors.

The overall approach to communicating the outbreak targeted primarily food safety. As such, it was not oriented enough toward informing the public of a potential hazard, but instead focused on gathering scientific evidence to confirm the foodborne illness and its source before going public about it.

Overall, the shortcomings in communicating to the public the relevant information related to the health emergency fall into three main categories:

- » *Timing*: The federal communication efforts began at a late stage of the outbreak, after the first recall – later than the efforts of other parties involved. Against this it must be remembered that the 2008 outbreak first emerged in Ontario and was therefore under provincial leadership. The federal

government was also late in using communication vehicles well-suited to reaching specific, at-risk populations. Activity dropped off dramatically after September 6<sup>th</sup>, when the election was called (not an uncommon practice during election campaigns), even though demand for information by the public was still high.

- » *Fragmentation*: More than one source had to be accessed in order to get the complete story. In addition, greater emphasis on food safety and technical information about the outbreak, rather than on its public health dimensions, resulted in an unbalanced communications effort.
- » *Reactive*: The federal government's communication efforts became focused on 'damage control' to answer allegations of mismanagement of the inspection services. Keeping to the usual approach for risk communication

was difficult. This diminished the ability of the government to effectively address Canadians' concerns.

## Chronology of the outbreak and federal public communications

Factors compounding the timing, fragmentation and reactive nature of the federal government's communication efforts were:

- » The lack of a single lead organization and management of the federal government's communications efforts to the public. With different parties in charge of various segments, communications activities were not always well coordinated or optimized. The *Foodborne Illness Outbreak Response Protocol*<sup>1</sup> was inadequate in this regard. From an audience point of view, having to obtain information from three different federal government sources imposed a burden on an already-confused public. The roles and responsibilities of the federal organizations involved in managing the public health emergency and in communicating to the

<sup>1</sup> FIORP is a joint federal, provincial and territorial protocol to guide multi-jurisdictional responses when a foodborne emergency arises. The roles and responsibilities of all governments charged with investigating and managing such an outbreak are outlined in the protocol.

### Dr. David Butler-Jones

'Our public communications were important. But it's clear that much needs to be improved. It was found that the agency should approve its advance planning and formalize ... its communication protocols. We must also work on clarifying our roles and responsibilities in outbreaks, for the public as well as our partners. ...

The human health aspects of it [foodborne emergency]--the understanding and making sure of the advice to the system and the process on human health--are for the public health agencies. It's my responsibility and accountability to do that. That's what we did at that time. One of the lessons learned is that there's an expectation of more visibility of the CPHO.'

» DR. DAVID BUTLER-JONES  
CHIEF PUBLIC HEALTH OFFICER OF CANADA,  
APPEARING BEFORE THE AGRICULTURE SUBCOMMITTEE ON FOOD SAFETY, APRIL 22, 2009

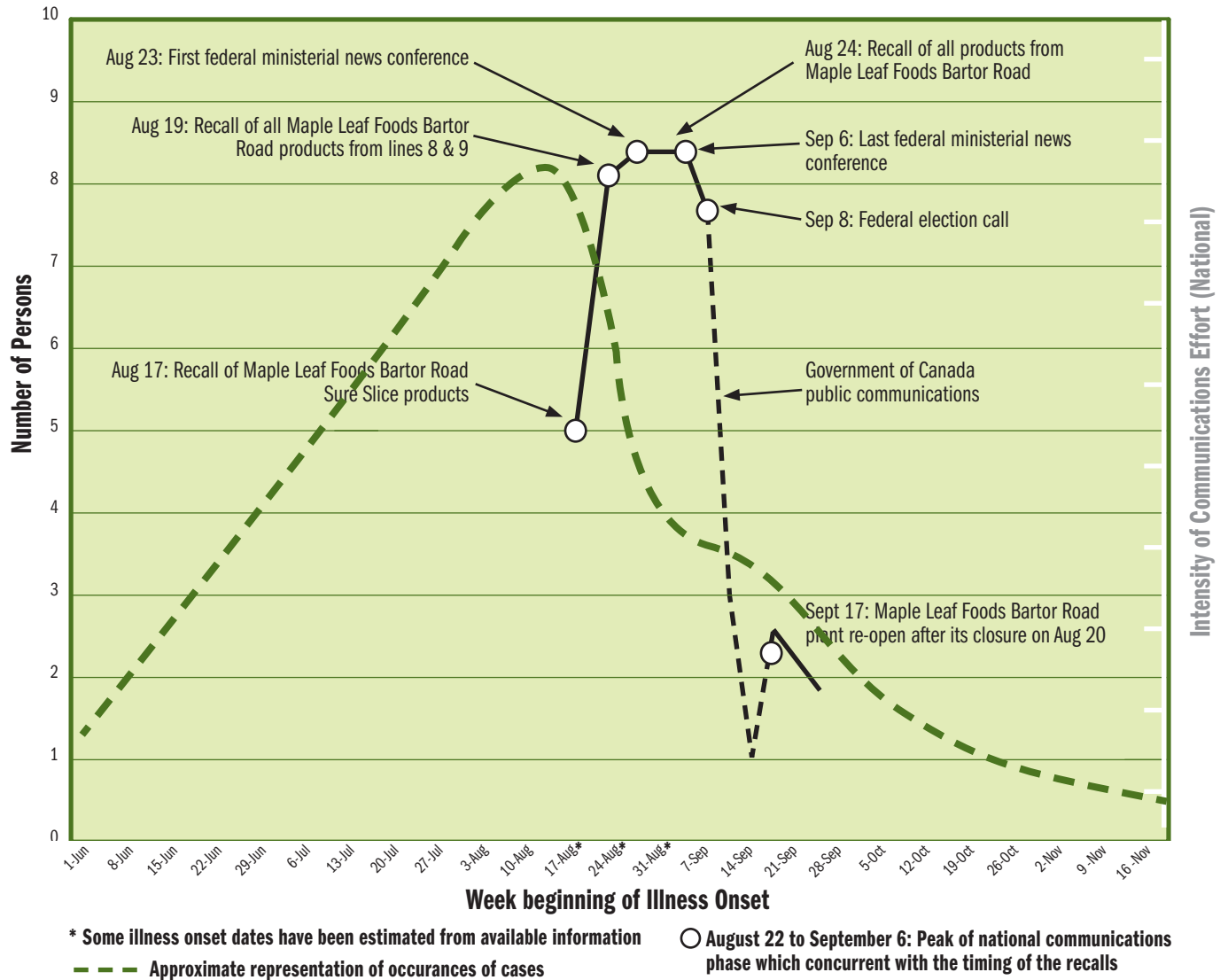
public were not well understood by the general population. Even media representatives were not certain as to which government officials should be contacted to obtain information. The fact that provincial governments were also very active - and appropriately so - on the communications front added to the feeling of confusion. This was particularly true since, initially at least, federal information provided on the status of the outbreak was not easily reconciled with information provided by provincial authorities;

- » While the public expects in an emergency that the lead spokesperson will be a minister, an 'elected' official, the choice of the appropriate ministerial lead was a matter of debate. The government's decision to have the Minister responsible for the CFIA act as lead, while it made sense initially given that the event was considered a food safety issue, limited

the public health dimension of communications activities. We heard that consideration had been given to reassessing the choice of ministerial spokesperson, depending on changing circumstances. However, we also heard that the best practice in communications is to maintain a single spokesperson throughout an event. The Minister of Agriculture and Agri-food was prepared and available to comment on both the food safety and public health dimensions of the issue, and was assisted by senior officials in both fields. But the public view was that the government did not put enough emphasis on advising Canadians about what they needed to do to protect themselves;

- » The view among some, especially in the public health community, that the Chief Public Health Officer of Canada was not visible enough during the outbreak; and,

**Chronology of the outbreak and federal public communications**  
Infections with the Outbreak Strain of *Listeria monocytogenes*  
by Symptom Onset Date or Estimated date\*



» The lack of preparedness (e.g. unavailability of basic communications material early on for the most at-risk populations, no pre-existing arrangements with external suppliers for key communications support, insufficient simulation-type training, and inexperience with regard to

applying the recently-adopted 2006 Risk Communications Framework).

**KEY FINDINGS**

Our findings are based on six dimensions of the federal government's communications efforts:

» *Content:* We heard from consumer organizations that information

about the outbreak was difficult to locate and understand. The content of messages to the public could have been improved by:

- » better integrating the food safety and public health dimensions of the outbreak;
- » getting their advice on the

content as well as asking for their assistance in rapidly disseminating information to consumers;

- » Using more 'plain' language and everyday examples; and,
- » ensuring consistent and harmonized definitions and methods of calculating the number of cases among organizations and between governments.
- » *Timeliness*: Federal communications to the public were slow off the mark, and were not sustained for a sufficient period of time
- » *Roles and responsibilities*: The duties of federal agencies and departments involved in managing the health emergency and in communicating to the public should be well understood by both the general population and the media before an emergency occurs. This would require efforts to better position these organizations (i.e., clarifying mandate and functions; describing roles, activities and key practices before, during and after an outbreak).
- » *Communications strategy*: An advance communications strategy and related implementation plan, including ready-made information products and the use of traditional and new media vehicles, would have

## Suggestion

"Appropriate authorities should increase communications to the general public during a foodborne disease outbreak using television, radio and other news sources."

» A SUGGESTION BY A FAMILY AFFECTED BY THE OUTBREAK

- improved the federal government's communications to the public during the listeriosis outbreak
- » *Relationship with media*: Since the effectiveness of public communications is enhanced by a collaborative relationship with media that can maximize the impact of communications, a strategy to establish and maintain such relationships should be developed and implemented. During a public health emergency, the media play two roles: a) to report, in an independent manner, any related news it deems relevant, and; b) to relay important public health messages from the government regarding the emergency. The government should also make all possible efforts to ensure that its public health messages are accurately and effectively communicated.
  - » *Spokespersons*: Maple Leaf Foods took the lead in communicating to Canadians about the cause of the outbreak, assuming responsibility for it and, in the process, shaping

the public perception of the event. The CFIA was aware of and supported Maple Leaf Foods' approach to communications. Meanwhile, Canadians were seeking reassurance from government that public health was being protected.

Having the Minister responsible for Agriculture and Agri-food and the CFIA serve as the lead ministerial spokesperson, was considered by some to be a 'conflict of interest' even though the minister has a legitimate role in relation to the food industry. It appeared to limit government's capacity to communicate health information sought by the public. The perceived lack of federal public health leadership in the event attracted many comments.

- » *Leadership and coordination*: Communications teams from the different federal agencies understood the importance of cooperation and they demonstrated a willingness to work together. However, the

## Something we heard during our interviews:

There was a general intent of the senior management at Maple Leaf Foods and the CFIA to cooperate fully on communications and to share to the extent possible, a common communication strategy.



absence of a designated communications coordinator resulted in a fragmented approach and seemingly inconsistent messaging. This was compounded by the fact that the public, the media, and even provincial and territorial partners were not clear about the division of roles and responsibilities among federal organizations.

» *Preparedness*: Lack of appropriate advance planning resulted in sometimes onerous adjustments that delayed and impaired effective communications.

#### **RECOMMENDATIONS:**

- 37. The Public Health Agency of Canada should assume the lead role (non-ministerial) in communicating to the public for a national foodborne emergency.**
- 38. The Canadian Food Inspection Agency and the Public Health Agency of Canada should enhance their public profile to increase awareness of their mandates.**
- 39. The principles of risk communications should drive the federal communications strategy and activities. Therefore, the Health Canada/Public Health Agency of Canada Strategic Risk Communications Framework should be implemented and become the principal reference**

**point and standard for federal government communication to the public on foodborne emergencies, such as listeriosis.**

- 40. Communications staff should be aware of developing trends in communication and ensure the capability exists to use the best vehicles available to reach key audiences as quickly as possible.**

**A “one-stop” website capability should be developed in order to provide easier public access to crucial information. Accountability for its maintenance should be clearly identified.**

- 41. A series of communication measures that will contribute to an acceptable level of preparedness should be identified and put into place.**

**These would include simulation training, contingency planning to ensure availability of key resources and ready access to outside suppliers. The measures should also include the preparation of certain communications material in advance, such as basic information on listeriosis and other foodborne illnesses for at-risk populations and health providers.**

**It would also include the development of a communications strategy, based on solid marketing**

**research and analysis, and a related implementation plan. The strategy should identify the target audiences, their information requirements, and how and by whom they are best reached.**

## **COMMUNICATIONS TO PHYSICIANS**

The Canadian Medical Association (CMA) maintains an e-panel made up of 950 physician members of CMA who have agreed to respond to regular brief electronic questionnaires about a variety of topical issues.

In April 2009, following discussions between the CMA and our team, an e-panel survey<sup>2</sup> on listeriosis asked about the use of health alert advisories, information needed to diagnose and treat listeriosis cases, and preferred sources of information and methods of communication during a national disease outbreak. The survey was a combination of open- and closed-ended questions.

<sup>2</sup> The survey was conducted in April 2009, seven to eight months after the outbreak occurred. According to the CMA, a 23% response rate is acceptable for e-panel surveys. The e-panel includes physicians who use electronic communication methods, thus their preferences are representative of this cohort.



## KEY SURVEY RESULTS:

- » 60% of the physicians surveyed remembered receiving a health alert on listeriosis (from some source), and of those, almost everyone (94%) judged it useful.
- » Responses to the open-ended questions highlighted the need for alerts to be concise and from one source, a centralized web site for physician information such as guidelines and screening tools, and notification of physicians before the media.
- » Physicians' greatest challenges in educating patients about minimizing risks of foodborne illness are lack of patient friendly materials (77%), lack of knowledge regarding the outbreak (69%), and lack of time (69%).
- » Their preferred sources of information during a foodborne outbreak are the local public health unit (79%) and the provincial or territorial department of health (78%) or the provincial or territorial Chief Medical Officer of Health (75%). The next most frequent sources would be Google (70%), the Centers for Disease Control and Prevention in Atlanta, USA (62%) and the Public Health Agency of Canada (57%).
- » Their preferred methods for receiving information during a national disease outbreak are email alert (100%), web site (92%), fax alert (69%) and mail (57%).

- » To more effectively diagnose and treat suspected listeriosis cases, physicians report they need situation-specific clinical practice guidelines (96%), information on lab testing (90%), clinical case definitions (89%), screening questionnaires (86%) and websites tailored to physicians (86%).

## KEY FINDINGS

- » Physicians value 'just in time' information from credible source – outbreak (and local situation) update, guidelines, patient materials, etc.
- » They look first to local/provincial public health for information about an outbreak

## PUBLIC EDUCATION

Before the 2008 outbreak and the widespread media coverage of the foodborne disease outbreak, even well informed Canadians were likely unaware of listeriosis. Given that older Canadians – one of the fastest growing segments of the population – are the most susceptible to the disease and that there are things individuals can do to protect themselves, there is a strong argument for public education programs to raise awareness about the disease and its transmission. Information geared to members of high-risk groups or those who care for them is especially important.

One of the primary functions of public health officials is to prevent and

reduce disease and premature death. They do so by identifying and reducing health threats. Directly related to this role, another key activity of public health is educating people about how to protect themselves from illness and injury, and prevent the spread of diseases.

With some exceptions, public education efforts to raise awareness about listeriosis were minimal when the crisis struck. The majority of Canadians were unaware of those at greatest risk of becoming ill if exposed to *Listeria monocytogenes*, what foods these individuals should avoid, or proper food preparation and handling measures or the unique characteristics of *Listeria*.

Overall, the scarcity of educational materials, coupled with the lack of awareness of listeriosis, contributed to public confusion about what individuals could and should do to protect themselves during the 2008 outbreak.

The fact that there were nearly two and a half million visits to the CFIA's website between August 17 and September 14, and, that telephone calls from consumers to the CFIA climbed from an average of 75 calls per day to more than 1,400 daily following the food recalls is a clear indication of the public's urgent need for information about the outbreak and how to avoid eating contaminated foods.

Health Canada and the Public Health Agency of Canada provided general information about listeriosis on their web sites. However, a telephone

## Suggestion

“There should be warning labels on food packaging for high risk groups and more public education funded by governments regarding the prevention of foodborne illness among vulnerable populations.”

» A SUGGESTION BY A FAMILY AFFECTED BY THE OUTBREAK

hotline and other interactive communications vehicles were not available, so it is not possible to compare the level of public interest in receiving information about the disease.

Another example of targeted public education is labelling. We have heard support for warning labels, which could be targeted to vulnerable populations to help educate and prevent the use of food products that could pose a risk to their health. We also heard other views from industry and institutional associations of the risk of over utilization of such labelling causing the public to become indifferent to their intent.

## Precautionary Labelling

Some countries use warning labels that indicate allergens or ingredients which may pose risks to health for at risk populations.

In the U.K., a ‘traffic light warning’ system utilizes green, yellow and red colour coding on product packages to identify which products

are safe, those that require caution and those that should be avoided by certain populations. A variation of the ‘heart check’ approach to identify foods that are safer for certain at-risk populations, the program provides information to consumers at the point of purchase.

## RECOMMENDATION:

**42. To protect vulnerable populations, including the immuno-compromised, older people and pregnant women, Health Canada should promote consumer education into the risks associated with *Listeria*. This could include targeted measures, such as precautionary labelling. This should be accomplished in collaboration with the Public Health Agency of Canada and in conjunction with provincial and territorial health partners.**

## NEXT CHAPTER

“Following the 2008 outbreak, each of the key federal organizations (Health Canada, the Public Health Agency of Canada and the Canadian Food Inspection Agency) involved in the event prepared ‘lessons learned’ reports. ...”





# CHAPTER 9

What progress has been made since the outbreak?

## What progress has been made since the outbreak?

Following the 2008 outbreak, each of the key federal organizations (Health Canada, the Public Health Agency of Canada and the Canadian Food Inspection Agency) involved in the event prepared 'lessons learned' reports. The objective of these reports was to assess the respective organizations' performances in the outbreak, to identify any weaknesses, and to develop action plans to address these shortcomings.

## Carol Swan

“The events of last summer exposed vulnerabilities in collective surveillance and in a national protective network. We recognize that our work to improve is never done – that continuous improvement is key to food safety. Through the review process, we determined where immediate improvements could be made and we have made them.”

» CAROL SWAN, PRESIDENT, CFIA  
APPEARING BEFORE THE AGRICULTURE SUBCOMMITTEE ON FOOD SAFETY, APRIL 20, 2009

At the provincial level, Ontario and British Columbia’s Chief Medical Officers of Health undertook similar exercises, reporting on their provinces’ management of the outbreak.

On the industry side, Maple Leaf Foods also conducted a post-outbreak review in order to learn from the event. The company contracted an international panel of experts comprising leading North American experts in *Listeria* control to review its operations at the Bartor Roadplant. The panel was charged with identifying the probable causal factors that resulted in Maple Leaf Foods inability to control *Listeria* inside the plant and that consequently led to the outbreak.

Taken together, these post-outbreak reviews provide valuable lessons for the federal government, along with its food safety partners and the food processors, about how to prevent foodborne illness outbreaks, or at a

minimum, to respond more effectively and efficiently when they occur.

Federal organizations involved in the outbreak were awaiting the report from the House of Commons Subcommittee on Food Safety, which was tabled in June 2009, as well as this review by the Independent Investigator before finalizing improvements to their operations.

In the interim, some of the recommendations generated by the early post-outbreak reviews have already been acted on; in other cases, improvements are in progress.

Health Canada, the Public Health Agency of Canada, the Canadian Food Inspection Agency, and Maple Leaf Foods have all developed plans that identify the work in progress to meet the recommendations set out in their lessons learned reports.

Attached as Appendix C, provides an overview of each organization’s

account of their progress to date since the outbreak, as shared with us. The progress is presented using the following four broad categories:

- » **Policies**
- » **Surveillance and Laboratories**
- » **Foodborne Emergency Preparedness and Response**
- » **Food Safety**

## NEXT CHAPTER

“During the course of this investigation, we came across a number of issues which, while not the focus of this review, have raised important points that merit closer examination. ...”

## Michael McCain

“I think there are lessons learned that all stakeholders, from the regulator to Maple Leaf Foods and other industry participants, can capture from this tragedy and improve in the future.”

» MICHAEL MCCAIN  
PRESIDENT AND CEO, MAPLE LEAF FOODS INC.  
APPEARING BEFORE THE AGRICULTURE SUBCOMMITTEE ON FOOD SAFETY, APRIL 20, 2009



# CHAPTER 10

## What else did we learn during this investigation?

### What else did we learn during this investigation?

During the course of this investigation, we came across a number of issues which, while not the focus of this review, have raised important points that merit closer examination.

Many of the things we heard and many of the issues we have considered have to do with the mandates of governments in ensuring Canada's food safety. As others have said before us, Canada's food safety requires the active, informed, and committed participation of all food safety partners. Current governance is not as sophisticated as this very important domain requires. Furthermore, many of the structures and the tools currently in place are outdated.



In a further effort to reform and modernize the food safety system in Canada, we offer the following guidance to the Government of Canada on additional matters, which should be acted upon.

## Government of Canada Food Safety Legislative and Regulatory Framework

Several pieces of key federal legislation in place to govern food safety and quality were enacted by Parliament many decades ago (e.g. the current *Food and Drugs Act* was first enacted in 1951). These are widely recognized to be out of date and in need of substantial consolidation and modernization.

After the CFIA was created in 1997, a bill was drafted to deal with legislative shortcomings known at that time. In 1999, Bill C-80, the *Canada Food Safety and Inspection Act*, was tabled in the House of Commons. The proposed bill would have allowed for the enhancement of inspectors' powers, the implementation of electronic commerce, inspection of all food products at points of entry, the licensing of all food importers, and the designation of specific points of

entry for certain commodities. The bill passed first reading but never made it further on the House calendar due to an election.

The Auditor General's 2000 Report to Parliament noted constraints in federal food legislation and recommended that the government address these limitations. The government acknowledged this recommendation. In 2004, the government introduced a modification of the earlier bill that focussed only on inspector powers and a series of prohibitions and licensing provisions. The bill, like the 1999 draft legislation C-80, did not proceed.

A third attempt to update selected federal food safety legislation was introduced in the spring of 2008, but it also died on the order paper when the election was called in September 2008.

A fourth attempt is currently being considered, although the scope of the proposed changes is modest in relation to earlier proposed amendments. We heard that the latest proposed legislative changes are under discussion.

### RECOMMENDATION:

**43. To simplify and modernize federal legislation and regulations which significantly affect food safety, the Government of Canada should mandate a lead agency to**

**conduct a comprehensive review and recommend improvements in a timely manner, taking into account the amendments or additions required to enforce, where applicable, the recommendations included in this report (e.g. the requirement to disclose any threat to food safety as covered by recommendations 6 and 20).**

## Federal organizational governance and structure

Through interviews with senior executives from various levels of government, industry, and other stakeholders, as well as the documentation review, we identified governance and structural problems. These recommendations are relevant to the overall performance and effectiveness of the federal organizations that were involved in the 2008 outbreak and their relationships with provincial and territorial partners in carrying out their food safety mandates and responsibilities.

### CANADIAN FOOD INSPECTION AGENCY

#### GOVERNANCE, STRUCTURE, AND ACCOUNTABILITY

The Canadian Food Inspection Agency was created, in part, to contribute to consumer protection and to create a more uniform and consistent approach to safety and quality standards as

Something we heard during our interviews

Science changes quickly, regulations do not.

well as a risk-based inspection system. These expectations have not been fully met.

Several attempts were initiated to update federal food safety laws and to introduce risk-based approaches to the CFIA inspection activities. However, while Bills were presented, they were not adopted because events including elections and major crises, such as mad cow and avian influenza outbreaks, disrupted the CFIA's renewal agenda to update laws and programs.

Furthermore, by establishing the Agency, the government sought a greater degree of collaboration and consultation among federal organizations and with other levels of government. This collaboration has not yet happened to the degree anticipated. As noted in previous chapters, there were problems with collaboration and there was confusion about the roles and responsibilities of various organizations during the initial stages of the food safety investigation.

In addition, the Canadian Food Inspection Agency is limited by the fact that it is organized, structured, and managed as a traditional federal department. Its objectives would be better achieved if it had greater flexibility to focus on its primary regulatory mandate of inspection (compliance) and enforcement. The current model has not resulted in clear lines of authority, accountability, or

meaningful collaboration. There is little information available publicly on overall program performance, expectations, and costs beyond the high-level measures found in the CFIA's Departmental Performance Report. Developing clearer lines of authority by introducing organizational direction, responsibility, and accountability measures could improve the Agency's performance and enhance collaboration within and outside the organization.

Also noteworthy is the frequent turnover of the person appointed as President (Chief Executive Officer) of the CFIA. The *Canadian Food Inspection Agency Act* authorizes the appointment of a President for a renewable five-year term. Since the Agency's creation in 1997, no president has stayed for a full five years. Five different presidents have been appointed in the past 12 years. This level of change at the most senior position of the organization does not promote continuity of executive management or advance the renewal agenda.

The introduction of the new federal meat inspection system (Compliance Verification System) lacked adequate planning and consultation and was not approved by the Agency's Executive Committee.

As previously described, the CVS has shortcomings, including the fact that inspectors' tasks have not been adjusted to take into account each

plant's unique characteristics. This is an example of the organization not putting appropriate emphasis on a key component of its regulatory mandate.

With respect to accountability to Parliament and Canadians, the Canadian Food Inspection Agency has tabled, in lieu of its legislated five-year Corporate Business Plan (2008-2013), a one-year operational plan taken entirely from its annual Report on Plan and Priorities document (Estimates, Part III). This submission falls short of the five-year plan required by the legislation. As well, the absence of a consultative process with the Agency's partners and stakeholders, and a lack of consensus on a shared long-term vision on its primary areas of focus for the next five-year business cycle, has isolated the CFIA.

The oversight and decision-making associated with the CFIA's resources allocation, regulatory program delivery, and personnel management appears to lack the rigour warranted by a regulatory agency of this nature. The previous example of the Agency's Corporate Business Plan for 2008-13 is another demonstration of functioning more like a department in the conduct of its business.

While the *Canadian Food Inspection Agency Act* includes a provision for a Minister's Advisory Board to provide advice on any matter within the responsibilities of the Agency, Board

members have not been appointed since 2002.

These factors represent, within the context of our investigative review, the rationale for the introduction of an enhanced model of governance for the CFIA.

## RECOMMENDATIONS:

- 44. As soon as possible, the Canadian Food Inspection Agency, supported by independent experts, should initiate a comprehensive review of**
- a. its organizational structure;*
  - b. the current delegation of responsibility and lines of accountability within the Agency; and*
  - c. its decision-making processes.*
- 45. Concurrent with the review, the federal government should consider replacing the current requirement for an Advisory Board with a Board of Management which, subject to powers to be retained by the Minister including all decisions related to policy, legislative, regulatory and emergency matters, should oversee the organization and operational management of the Canadian Food Inspection Agency, and advise the Minister on policy matters.**
- At a minimum, the federal government should consider the immediate appointment of the

Bob Kingston

"If you look after animal and plant health and food safety in Canada - your goods will be highly marketable in other countries."

» BOB KINGSTON  
PRESIDENT OF THE AGRICULTURE CHAPTER OF THE PUBLIC SERVICE ALLIANCE OF CANADA

**Advisory Board established under subsection 10 (1) of the *Canadian Food Inspection Agency Act*.**

The Board should be specifically directed to advise the Minister on issues relevant to the vision, accountability, mandate, and public perception of the Agency and risk management.

- 46. The federal government should endorse the need for continuity and vision at the Canadian Food Inspection Agency by making efforts to ensure, wherever practical, that the 5-year mandate given to the President under section 5 of the *Canadian Food Inspection Agency Act* is fulfilled.**
- 47. As a regulatory agency, the Canadian Food Inspection Agency should create a formal and transparent consultation strategy to define its required engagement with stakeholders.**
- 48. To ensure consistent and timely enforcement practices across the country, the Canadian Food Inspection Agency should review the interpretation and application of its rules and enabling legislation.**

## Broad mandate that covers three lines of business

The Canadian Food Inspection Agency has a broad mandate that covers the administration and/or enforcement of thirteen laws, which regulate more than thirty-five sectors of the economy. These sectors are commonly categorized under three lines of business: food safety, animal health, and plant health.

The inherent complexities of such breadth and the constant pressures of emerging issues, including numerous crises management interventions in those sectors, limit the Executive Committee's ability to be anticipatory and proactive.

In our view, the CFIA could benefit from the ongoing advice of experts in the field to stay current with the numerous elements that should be guiding the organization's future. These experts could help each management team focus on current, and anticipate future, changes affecting each line of business. They could also assist in designing appropriate and timely regulatory interventions to meet the needs of consumers and industry. In saying this, we acknowledge the

advice being provided by the CFIA's Scientific Advisory Committee and Audit Committee (which includes external members).

#### **RECOMMENDATION:**

**49. The three main lines of business of the Canadian Food Inspection Agency, food safety, animal health, and plant health should be assisted by permanent expert advisory committees to guide their evolution.**

## Office of Food Safety and Recall

A further concern raised during the investigative review is the structural situation of the Office of Food Safety and Recall within CFIA. The Office was established as a stand-alone operation following a major foodborne emergency in 1999 due to pre-packaged luncheon meats. The incident involved 800 Canadians, mainly children, who became ill after eating tainted foods.

The mandate of the Office is to coordinate food emergency investigations and execute recall activities (including identifying the source of food contamination), as well as supporting Health Canada in conducting health risk assessments. The Office has critical responsibilities that do not easily fit within any particular part of the CFIA. Repeated

changes in the organization over the years have resulted in the removal of some key functions that reduce its effectiveness in times of emergency.

During the 2008 outbreak, recall activities were managed within this single part of the organization, with very limited engagement of senior executives. Nevertheless, the recall activities associated with the outbreak were appropriate and all standard operating procedures were followed.

#### **RECOMMENDATIONS:**

**50. The Office of Food Safety and Recall should report directly to the office of the President of the Canadian Food Inspection Agency.**

**51. The Canadian Food Inspection Agency should ensure that the Office of Food Safety and Recall has dedicated resources to undertake all the CFIA activities concerning recalls. The Office of Food Safety and Recall should be identified as the CFIA's primary point of contact with Health Canada during a food emergency.**

### **PUBLIC HEALTH AGENCY OF CANADA**

The Public Health Agency of Canada was established in 2004 in response to growing concerns about the capacity of Canada's public health system to anticipate and respond effectively

to public health threats, including foodborne illnesses.

The PHAC's creation followed recommendations from leading public health experts who called for clear federal leadership on public health matters and improved collaboration within and between jurisdictions. We heard continued support for the PHAC to play this role.

As was said of the CFIA, we heard that the PHAC's structure too closely resembles that of a federal department. As a result, it may be hampered in its ability to fulfil its mandate.

We repeatedly heard that the Centre for Foodborne, Environmental, and Zoonotic Infectious Diseases team is under-resourced and not optimally organized to face growing emergency situations. Because of globalization, the incidence of foodborne illnesses is increasing. Foodborne illness is now the largest class of emerging infectious diseases in Canada. And, at that, there is a growing consensus that the actual rate of foodborne diseases maybe be 300 to 350 times more frequent than the number of reported cases suggests.<sup>1</sup> The PHAC does not appear to have adequately adjusted its focus to be ready to respond to this new reality.

<sup>1</sup> Public Health Law & Policy in Canada, Second Edition, Bailey, Caulfield, Ries, Chapter 12, Foodborne Illness and Public Health (Ronald L. Doering), p. 483-4.

As well, we heard that more attention should be given to the management needs of this organization as it is primarily an operational entity.

Its main concerns should be to

- » develop the capacity and the capability to rapidly and efficiently respond to the broad spectrum of health emergency situations that fall within the mandate of the federal government;
- » adjust the assignment of resources to pre-determined priorities;
- » identify the surge capacity needs to support various emergencies in infectious, communicable, and foodborne diseases;
- » continuously create better networks among various components of the federal-provincial/territorial-local operational response systems needed to manage public health in Canada; and
- » address technology support gaps to enable this dispersed network of public health officials to respond quickly to health emergencies.

We heard that the PHAC was expected to be more advanced in its development after five years, especially in the area of national health emergency leadership and management. However, we have also heard that recent progress has been noted with respect to the way the current H1N1 health crisis has been handled.

## RECOMMENDATIONS:

**52. As soon as possible, the Public Health Agency of Canada, supported by independent experts, should initiate a comprehensive review of its structure and operational procedures with the objective of ensuring a more responsive and flexible organization to support national readiness for public health threats.**

**53. Concurrent with the review, the federal government should consider permanently assigning day-to-day operational management responsibilities of the Public Health Agency of Canada to an associate deputy head (i.e. a Chief Operating Officer equivalent to a second-in-command) to allow the Chief Public Health Officer to focus on his executive duties and responsibilities as the lead health professional of the Government of Canada in relation to public health and to ensure continuity of management.**

**At a minimum the day-to-day operational management responsibilities of the Chief Public Health Officer of the PHAC during a national foodborne emergency, should be temporarily assigned to an acting deputy head for the PHAC until the end of the emergency.**

## MULTI-DEPARTMENTAL GOVERNANCE OF FOOD SAFETY

Responsibility for food safety within the federal government is shared to various degrees among the Canadian Food Inspection Agency, Health Canada, and the Public Health Agency of Canada. While some would propose that a single organization should assume responsibility for all these functions, we recognize that it would be too complex and inefficient to address the current gaps and conflicts by such a major structural change.

However, we believe that there is an urgent need to put in place a coordinating body, which should focus on implementing actions to address the recommendations presented in this report. It could also examine the opportunity to institute a joint Scientific Committee on Food Safety.

Consideration could be given to a more permanent structure to develop an overall approach to federal food safety policies and programs with a more cohesive and forward looking agenda than is currently in place, such as existed between 1988 and 1994 – the Interdepartmental Committee of Food Regulations.

With the creation of PHAC and introduction of a third federal entity with key responsibilities for food safety in 2005, the need for joint action is greater than ever and demands a pre-determined coordinating structure to instil rigour, focus, and timely direction.



## RECOMMENDATION:

**54. The Clerk of the Privy Council should appoint an independent expert to chair a special committee of the deputy ministers responsible for Health Canada, the Public Health Agency of Canada, and the Canadian Food Inspection Agency. The chair should report to the Clerk directly. This committee should provide recommendations to improve the ways the organizations work together in their roles in food safety. It should also oversee the development of our proposal to simplify and modernize federal legislation and regulations.**

**The first tasks of this committee should be to reduce overlaps and address gaps among the organizations, improve communication and the sharing of information, resolve existing issues preventing harmonization of roles, and provide a report on these matters within six months.**

## MULTI-JURISDICTIONAL GOVERNANCE OF FOOD SAFETY

At the national level, food safety is the joint responsibility of the federal, provincial and territorial, and local governments. This joint responsibility has its roots in the federal and

### Dr. David Williams

“It was not clear to the partners which responsibilities rested with the Public Health Agency of Canada and the Chief Public Health Officer, and which ones with the Chief Medical Officer of Health in Ontario. It was also not clear whether the lead federal agency was PHAC or the CFIA, or to what extent local medical officers of health or the Chief Medical Officer of Health in Ontario could act alone to protect public health.”

» DR. DAVID WILLIAMS  
CHIEF MEDICAL OFFICER OF HEALTH'S REPORT  
ON THE MANAGEMENT OF THE 2008 LISTERIOSIS OUTBREAK IN ONTARIO

provincial powers set out in the *Constitution Act, 1867*<sup>2</sup>.

Food safety is important to all consumers and, therefore, important to all levels of government. Canadians expect governments to collaborate and ensure that the food supply is safe, wherever they eat or purchase their food, and care little about jurisdictional matters.

Nonetheless, improving the way governments address food safety is a cumbersome undertaking, given the multiple jurisdictions and complex issues involved. Moving forward in an efficient and proactive manner remains a challenge for all.

Despite these difficulties, since the mid-1980s, a series of coordinated efforts among the various jurisdictions has led to the development of preliminary components of a national integrated food safety system. For example, in 1989 there was work to review regulations and statutes to

ensure that terminology was uniform and consistent.

These efforts have evolved and increased over the past two decades, yet many of the problems remain unresolved. This was noted in the 2004 Auditor General of Canada Report on the Food Safety System, which highlighted the complexity and challenges faced by all levels of government in effectively managing such a demanding sector.

There is a Federal-Provincial/Territorial Food Safety Committee, currently composed of, and chaired by, Assistant Deputy Ministers from Health and Agriculture Ministries across Canada. Its purpose is to present all government perspectives on food safety as new issues emerge.

Although this committee released a draft report in September 2008 entitled ‘National Strategy for Safe Food’. However, the report addresses only some of the weaknesses that became apparent in the 2008 outbreak. More concerted and focused efforts are

<sup>2</sup> Online: <http://laws.justice.gc.ca/en/const/1.html>



needed to address current gaps in the multi-jurisdictional management of foodborne emergencies. Furthermore, this report does not appear to have been endorsed by Ministers.

In recent years, the work of the Food Safety Committee on has not had the same level of support as in the past when Deputy Ministers led these files on behalf of their respective governments.

#### **RECOMMENDATION:**

**55. Considering the serious implications of foodborne illnesses, governments should create a distinct federal, provincial and territorial committee reporting regularly to the federal Minister of Health. The Minister should share the progress of this committee with his provincial and territorial ministerial counterparts regularly.**

**This committee should enable national preparedness for foodborne outbreaks. One of its first tasks should be to develop and implement programs alerting vulnerable populations to the risks of listeriosis and identifying recommended sanitation and prevention practices.**

**The committee should be composed of officials from the Health and Agriculture Ministries across Canada, the Canadian Food Inspection Agency, and the Public Health Agency of Canada.**

## **Going forward**

In the November 2008 Speech for the Throne and subsequent budget, the Government of Canada committed to “keeping Canadians safe by putting in place new rules for food safety.”

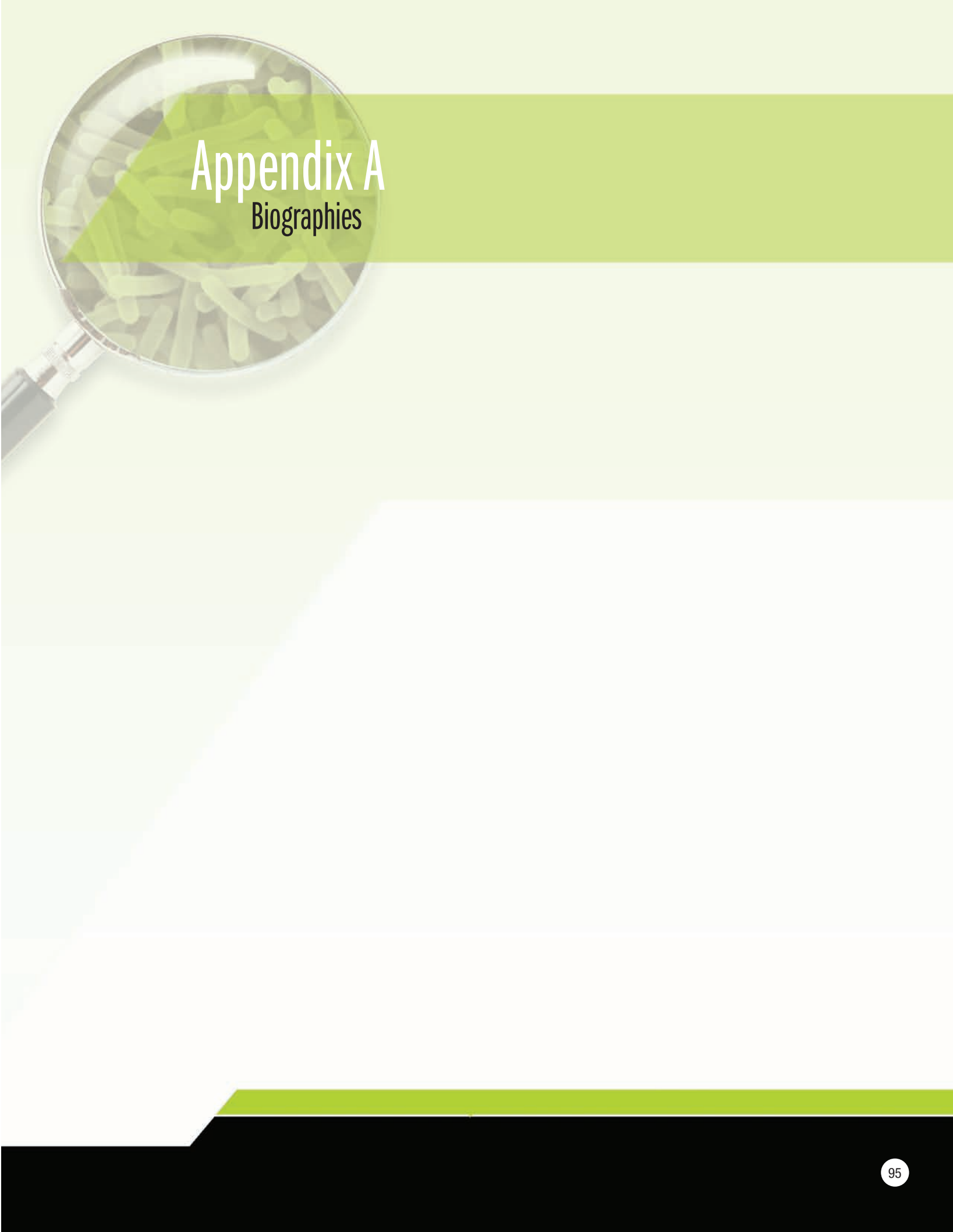
The 2008 outbreak has underscored the importance of a safe and nutritious food supply to the social and economic well being of all Canadians. In addition, given the increase in foodborne emergencies around the world, it is important for all Canadians as well as for Canada’s reputation as a major world class supplier of safe and high quality food, to continue to instil public confidence in Canada’s food production and distribution chain.

Canada is well positioned to succeed as it addresses the various recommendations outlined in this report. However, in light of the findings of this investigation, and in order to play a global leadership role, the following is recommended.

#### **RECOMMENDATIONS:**

**56. In setting its agenda for the fall of 2009, the government should be mindful that due to globalization and increased Canada-wide production and distribution of food, food safety will require increased attention. Although Canada is already a leader in food safety practices and systems, the government should clearly and emphatically commit to the safety of food as one of its top priorities.**

**57. Following its receipt and review of this report, the government should commit to reporting back to Canadians, within two years, on the implementation of the recommendations contained in this report together with an assessment of their impact on improving Canada’s food inspection and food safety emergency response systems.**



# Appendix A

## Biographies

# Independent Investigator

## Sheila Weatherill, C.M., B. Sc.N.

Ms. Weatherill earned her B.Sc. in Nursing and post-graduate Diploma in Public Health from the University of Alberta.

She has occupied a number of positions in the administration and delivery of health services prior to becoming President and CEO of Capital Health (Edmonton, Alberta) from 1996 to 2006. Capital Health is one of Canada's largest integrated, academic health systems, providing health services to over one million residents in Edmonton and area and complex tertiary/quaternary services to two million people across central and northern Alberta and northern and western Canada.

Her most recent initiatives include the development of the Mazankowski Alberta Heart Institute, Western Canada's first heart institute; the Edmonton Clinic, a new patient-centred approach to ambulatory care, education and research; and netCARE, Alberta's first electronic health record.

Ms. Weatherill is active in community and professional organizations. She is currently Vice-Chair of EPCOR's board of directors as well as serving on the board of directors for Shaw Communications. She is an Associate Member of the Faculty of Nursing at the University of Alberta. Ms. Weatherill has previously served on the boards of the Conference Board of Canada, the Canadian Institute for Health Information,

the Association of Canadian Academic Health Organizations and the Edmonton YMCA.

Ms. Weatherill was named one of Canada's 100 Most Powerful Women by the Women's Executive Network in 2003, 2004, 2005 and 2006 and admitted to its Hall of Fame in 2007.

In July 2006, Ms. Weatherill was appointed a Member of the Order of Canada. In November 2006, she was appointed a member of the Prime Minister's Advisory Committee on the Public Service, and in May 2008, she received the degree of Doctor of Laws honoris causa from the University of Lethbridge.

# Expert Advisory Group

## John Carsley MD CM MSc CCFP FCFP FRCPC

Dr. John Carsley is a Medical Health Officer for the Vancouver Coastal Health Authority in British Columbia, medical consultant to the Infant, Child & Youth Program in Vancouver, and School Medical Officer for BC School District 39.

A Community Medicine Specialist, Dr. Carsley is a graduate of Yale University and the McGill University Faculty of Medicine, where he received his medical degree and a Master's degree in Epidemiology and Biostatistics. After completing residency training in both family medicine and community medicine at the Montreal General Hospital, he worked for the Department of Community Health of the Montreal General Hospital (le Département de santé communautaire de l'Hôpital générale de Montréal) and the Public Health Department (la Direction de santé publique) of the Montreal Health and Social Services Agency (l'Agence de la santé et des services sociaux de Montréal).

In his twenty-five years in this urban public health setting, he worked in primary care organization, immunization programming and evaluation, communicable disease prevention and control, and environmental health, spending the last ten years in Montreal as head of the health protection sector. He has been involved in the investigation of, and response to, many significant outbreaks of communicable disease at the local, regional and national levels and has served on a wide variety of regional, provincial and national expert committees on communicable disease prevention and public health program development, practice and policy.

As well, Dr. Carsley has had a long career as a public health teacher, both in McGill University's Faculty of

Medicine, as associate professor in the department of Family Medicine and the department of Epidemiology and Biostatistics and Occupational health, at Université de Montréal, and, since moving to Vancouver, for the community medicine post-graduate education program at the University of British Columbia. He is a Fellow of the Royal College of Physicians and Surgeons of Canada and the College of Family Physicians of Canada.

## Walter F. Schlech III, MD

Dr. Schlech is a graduate of Williams College (BA, Poli Sci) and Cornell University Medical College (MD). He is certified in Internal Medicine and Infectious Diseases and currently Professor of Medicine in the Dalhousie University Faculty of Medicine and a member of the Division of Infectious Diseases. He has been involved in listeria research since 1980 when as an Epidemic Intelligence Officer at CDC, Atlanta, his team helped investigate the Maritime listeriosis outbreak in 1981, the largest at the time, and established for the first time that listeriosis was a foodborne disease. He has subsequently carried out work in both the pathogenesis and epidemiology of foodborne listeriosis. He organized the XIIth International Symposium on Problems of Listeriosis (ISOPOL) which occurred in Halifax in 1998.

As a clinical researcher, his other interests include research in a wide variety of infectious diseases including HIV. He is a past president of the Canadian Infectious Diseases Society, a past member of the National Advisory Committee on AIDS in Canada and CDC Atlanta's Advisory Committee on HIV, STD,

and Tuberculosis. He is a principal investigator of the Canada-Africa Prevention Trials (CAPT) Network with partnerships in Uganda, South Africa, and Kenya. Dr Schlech is also Governor for the Atlantic Provinces of the American College of Physicians and a member of its International Advisory Committee.

## Dr Mansel W. Griffiths

Dr Griffiths was born and raised in Swansea, S. Wales. He took his BSc degree in Applied Biology at North East London Polytechnic and his PhD was obtained from Leicester University where he studied the biochemistry of thermophilic microorganisms under the supervision of Sir Hans Kornberg.

Dr Griffiths was appointed to the staff of the Hannah Research Institute, Ayr, Scotland in 1974 and, in 1980, he was appointed head of the Dairy Microbiology group. In 1990 Dr Griffiths was appointed Chair in Dairy Microbiology in the Food Science Department at the University of Guelph. Dr Griffiths' position is funded jointly by the Dairy Farmers of Ontario and the Natural Science and Engineering Research Council of Canada (NSERC). Dr Griffiths is Program Chair for the M.Sc. in Food Safety and Quality Assurance being offered at Guelph and is the Director of the Canadian Research Institute for Food Safety.

His current research interests include rapid detection of foodborne pathogens; factors controlling growth and survival of microorganisms in foods; and beneficial uses of microorganisms. Dr Griffiths has authored more than 250 peer-reviewed articles and appears on ISI HighlyCited.com.

Dr Griffiths is an Editor of Applied and Environmental Microbiology; an Associate Scientific Editor of the Journal of Food Science, a member of the Executive Editorial Board of Journal of the Science of Food and Agriculture, and serves on the editorial boards of Food Research International, Journal of Food Protection, International Journal of Food Microbiology and Foodborne Pathogens and Disease. He is a member of the International Dairy Federation working group on milk-borne pathogens and is chair of the Canada IDF Coordinating Committee on Food Safety. He also serves on the Expert

Scientific Advisory Committee for Dairy Farmers of Canada. He is Chair of the International Advisory Board of the EU 6th Framework Project entitled "Biotracer". He was the recipient of the International Association of Food Protection Maurice Weber Laboratorian of the Year for 2002 and served on the Ontario Meat Inspection Review, Expert Scientific Advisory Committee in 2004. In 2006 he was appointed Visiting Professor at Jinan University, China.

## R. Bruce Tompkin

Bruce received his Ph.D. in microbiology from Ohio State University in 1963 and started as a research microbiologist with Swift & Company in 1964. He became Chief Microbiologist in 1966 and retained that position until 1993 when he was promoted to Vice President Product Safety for ConAgra Refrigerated Foods. He and his colleagues investigated how to control pathogens in a wide variety of foods and food processing environments, new processing technologies, the use of additives to improve food safety and the role of sodium nitrite in controlling Clostridium botulinum. From 1987 until his retirement approximately 70% of his time was devoted to managing Listeria in ready-to-eat food operations. During that time the company grew to include over 200 packaging lines for ready-to-eat meat and poultry products in more than 25 plants. A significant portion of his time involved sharing best practices with others in industry, government and academia. He has contributed more than 175 publications, presentations and 30 book chapters.

Bruce was a member of the US National Advisory Committee on Microbiological Criteria for Foods for 10 years and the International Commission Microbiological Specifications for Foods for 20 years, serving as a consultant to the Commission for an additional 7 years. He helped define the principles of HACCP, the concept of a food safety objective, the role of microbiological testing in food safety management systems and the significance of harborage sites as a source of Salmonella and Listeria in food operations. He retired from ConAgra in 2002 and continues to promote food safety through participation on committees and other means.

# Michael P. Doyle

Dr. Michael P. Doyle is a Regents Professor of Food Microbiology and Director of the Center for Food Safety at the University of Georgia. He is an active researcher in the area of food safety and security and works closely with the food industry, government agencies, and consumer groups on issues related to the microbiological safety of foods. Dr. Doyle is a graduate of the University of Wisconsin-Madison where he received his B.S. degree in Bacteriology, and M.S. and Ph.D. degrees in Food Microbiology. He serves on food safety committees of many scientific organizations and has served as a scientific advisor to many groups, including the World Health Organization, the Institute of Medicine, the National Academy of Science-National Research Council, the International Life Sciences Institute-North America, the Food and Drug Administration, the U.S. Department of Agriculture, the U.S. Department of Defense, and the U.S. Environmental Protection Agency.

He has more than 350 scientific publications and has given more than 700 invited presentations at national and international scientific meetings. In addition, he has received several research awards from academic and national scientific organizations, is a Fellow of the American Academy of Microbiology, the International Association for Food Protection and the Institute of Food Technologists, and is a member of the National Academies Institute of Medicine.







# Appendix B

## Chronology of the listeriosis outbreak

### Chronology of the listeriosis outbreak

The following chronology has been prepared based on the detailed review of information available to the investigative team from both testimony and documents.

The investigation identified key documents and testimony which have been used to validate each entry. Certain entries were drawn, and relied upon, from the chronologies prepared in the lessons learned reports of the Federal (CFIA/HC/PHAC) and Provincial (MOHLTC) departments and agencies involved with these events.

## ACRONYMS

AAFC	Agriculture and Agri-Food Canada
CEO	Chief Executive Officer
CFEZID	Centre for Foodborne, Environmental, Zoonotic and Infectious Disease (PHAC)
CFIA	Canadian Food Inspection Agency
CIOSC	Canadian Integrated Outbreak Surveillance Centre
CMOH	Chief Medical Officer of Health
CPHO	Chief Public Health Officer
CVS	Compliance Verification System
FIORP	Foodborne Illness Outbreak Response Protocol
P/T	Provincial/Territorial
HACCP	Hazard Analysis Critical Control Point
HC	Health Canada
LRS	Listeriosis Reference Service (HC)
HRA	Health Risk Assessment
iPHIS	Integrated Public Health Information System
MLF	Maple Leaf Foods
MOHLTC	Ministry of Health and Long-Term Care (Ontario)
NML	National Microbiology Laboratory (PHAC)
OFSR	Office of Food Safety and Recalls (CFIA)
OMAFRA	Ontario Ministry of Agriculture and Food and Rural Affairs
PHAC	Public Health Agency of Canada
PFGE	Pulsed Field Gel Electrophoresis
PHU	Public Health Unit
RTE	Ready-to-eat
TPH	Toronto Public Health
US	United States

## PRE-OUTBREAK

### WEEK OF MARCH 25, 2007

- [1] Increase in positive *Listeria* test results, on line 7 from the MLF plant's environmental monitoring program.

### WEEK OF JULY 22

- [2] Increase in positive *Listeria* test results, on line 8 from the MLF plant's environmental monitoring program.

### WEEK OF AUGUST 12

- [3] Increase in positive *Listeria* test results, on line 8 from the MLF plant's environmental monitoring program.

### WEEK OF NOVEMBER 18

- [4] Increase in positive *Listeria* test results, on lines 7 & 8 from the MLF plant's environmental monitoring program.

### FRIDAY, FEBRUARY 1, 2008

- [5] Earliest production date of a sample that tested positive for *L. monocytogenes* of a product produced on line 7 at MLF Bartor Rd of MLF based on CFIA's post recall sampling.

### WEEK OF FEBRUARY 4

- [6] Increase in the positive *Listeria* test results, on line 7 from MLF plant's environmental monitoring program.

### WEDNESDAY, APRIL 2

- [7] MLF completes a Positive Recovery Corrective Action Report (CAR) for Bartor Rd in response to the positive *Listeria* environmental monitoring program results.

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### » THURSDAY APRIL 10

- [8] MLF completes a Positive Recovery Corrective Action Report (CAR) for Bartor Rd in response to the positive *Listeria* environmental program results.

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### » WEDNESDAY, APRIL 16

- [9] MLF completes a Positive Recovery Corrective Action Report (CAR) for Bartor Rd in response to the positive *Listeria* environmental program results.

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### » WEEK OF MAY 19

- [10] Increase in the positive *Listeria* test results, on line 7 & 8 from MLF plant's environmental monitoring program.

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### » WEDNESDAY, MAY 14

- [11] MLF completes a Positive Recovery Corrective Action Report (CAR) for Bartor Rd in response to the positive *Listeria* environmental program results.

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### » THURSDAY, MAY 27

- [12] MLF completes a Positive Recovery Corrective Action Report (CAR) for Bartor Rd in response to the positive *Listeria* environmental program results.

## EMERGENCE OF OUTBREAK

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### » TUESDAY, JUNE 3

- [13] Earliest known onset of human illness related to *listeriosis* outbreak

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### » THURSDAY, JUNE 12

- [14] Slicing dates of product from MLF that tested positive that was collected and analyzed during the week of August 12

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### » TUESDAY, JUNE 17

- [15] First death linked to *listeriosis* from contaminated MLF products (diagnosed on June 10 and confirmed August 14).

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### » FRIDAY, JUNE 20

- [16] Slicing dates of product from MLF that tested positive that was collected and analyzed during the week of August 12.

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### » WEEK OF JUNE 23

- [17] Increase in the positive *Listeria* test results, from line 8 & 9 of the MLF plant's environmental monitoring program.

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### » TUESDAY, JUNE 24

- [18] MLF completes a Positive Recovery Corrective Action Report (CAR) for Bartor Rd in response to the positive *Listeria* environmental program results. [ID#141910] [Food Safety Investigation]

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### WEDNESDAY, JUNE 25

- [19] Slicing dates of product from MLF that tested positive that was collected and analyzed during the week of August 12.

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### THURSDAY, JUNE 26

- [20] Slicing dates of product from MLF that tested positive that was collected and analyzed during the week of August 12.

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### FRIDAY, JUNE 27

- [21] Slicing dates of product from MLF that tested positive that was collected and analyzed during the week of August 12.

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### SATURDAY, JUNE 28

- [22] Slicing dates of product from MLF that tested positive that was collected and analyzed during the week of August 12.

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### MONDAY, JUNE 30

- [23] Slicing dates of product from MLF that tested positive that was collected and analyzed during the week of August 12.

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### THURSDAY, JULY 3

- [24] Slicing dates of product from MLF that tested positive that was collected and analyzed during the week of August 12.

- [25] MLF completes a Positive Recovery Corrective Action Report (CAR) for Bartor Rd in response to the positive *Listeria* environmental program results.

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### SATURDAY, JULY 5

- [26] Slicing dates of product from MLF that tested positive that was collected and analyzed during the week of August 12.

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### MONDAY, JULY 7

- [27] Slicing dates of product from MLF that tested positive that was collected and analyzed during the week of August 12.

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### TUESDAY, JULY 8

- [28] Slicing dates of product from MLF that tested positive that was collected and analyzed during the week of August 12.

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### WEDNESDAY, JULY 9

- [29] Slicing dates of product from MLF that tested positive that was collected and analyzed during the week of August 12.

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### THURSDAY, JULY 10

- [30] As part of routine sampling, NML receives several human isolates of *L. monocytogenes* from the Ontario MOHLTC for DNA fingerprinting.

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### SATURDAY, JULY 12

- [31] Slicing dates of product from MLF that tested positive that was collected and analyzed during the week of August 12.

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### MONDAY, JULY 14

- [32] Slicing dates of product from MLF that tested positive that was collected and analyzed during the week of August 12.

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## » TUESDAY, JULY 15

- [33] Slicing dates of product from MLF that tested positive that was collected and analyzed during the week of August 12.

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## » WEDNESDAY, JULY 16

- [34] TPH begins investigating two cases of *listeriosis* in the same long-term care facility in Toronto. 11 food samples are collected and sent to TPH Labs. Samples were collected from prepared meals (retention samples) but were not linked to a manufacturer or production date.

- [35] Slicing dates of product from MLF that tested positive that was collected and analyzed during the week of August 12.

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## » FRIDAY, JULY 18

- [36] As part of routine sampling, NML testing identifies two human *listeriosis* samples received from MOHLTC that have matching DNA fingerprints.

- [37] Slicing dates of product from MLF that tested positive that was collected and analyzed during the week of August 12.

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## » MONDAY, JULY 21

- [38] Slicing dates of product from MLF that tested positive that was collected and analyzed during the week of August 12.

- [39] MLF completes a Positive Recovery Corrective Action Report (CAR) for Bartor Rd in response to the positive *Listeria* environmental program results.

- [40] The MOHLTC's Toronto Service Area Office receives a call from a Toronto long-term care facility on the evening of July 21st. The facility reports that it has two cases of *listeriosis*. One resident had died and the death is being investigated by the coroner's office; another resident was hospitalized. The Toronto Service Area Office forwards this information to MOHLTC.

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## » TUESDAY, JULY 22

- [41] MOHLTC analyzes surveillance information from iPHIS and finds no *listeriosis* illnesses reported from long term care facilities.

- [42] MOHLTC makes contact with TPH to follow up on reported cases of *listeriosis* in the long term care facility.

- [43] MOHLTC (Lab) receives eleven food samples collected for testing by TPH from investigation launched July 16.

- [44] Slicing dates of product from MLF that tested positive that was collected and analyzed during the week of August 12.

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## » WEDNESDAY, JULY 23

- [45] MOHLTC (Lab) forwards eleven food samples received on July 22 to the LRS.

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## » THURSDAY, JULY 24

- [46] LRS receives the eleven food samples sent by MOHLTC.



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## FRIDAY, JULY 25

- [47] MOHLTC program staff detects an increase in the number of cases of *listeriosis* from iPHIS data.
- [48] LRS begins analyzing the eleven samples.
- [49] Slicing dates of product from MLF that tested positive that was collected and analyzed during the week of August 12.

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## MONDAY, JULY 28

- [50] MOHLTC (Lab) reviews all cases of *listeriosis* from January 1 to July 28, 2008. MOHLTC staff contacts MOHLTC (Lab) and confirms 6 *listeriosis* cases (more than expected for July). MOHLTC continues investigating *listeriosis* cases (from July 25).
- [51] Slicing dates of product from MLF that tested positive that was collected and analyzed during the week of August 12.
- [52] Halton Region Health Department sampled meats from unopened boxes that were used at the Burlington Hospital (ham, roast beef and turkey) and forwarded them to the Hamilton Public Health Lab for testing.

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## TUESDAY, JULY 29

- [53] MOHLTC notifies CFEZID of an increase in the number of *listeriosis* cases reported by Ontario health units. An alert, through CIOSC, is issued to all provincial, territorial and local health authorities across Canada regarding the increase in *listeriosis* cases. This represents the first knowledge nationally of the growing problem in Ontario.

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## WEDNESDAY, JULY 30

- [54] MOHLTC initiates conference call with PHAC, HC and 15 Ontario PHUs. Actions taken include: 1) MOHLTC asks public health units to ensure *Listeria* isolates are forwarded to MOHLTC (Lab) who will then submit human isolates to the NML and food isolates to LRS; 2) LRS continues to receive and analyze food samples and isolates; and 3) MOHLTC issues an Enhanced Surveillance Directive to all PHUs, requesting additional and timely reporting of *listeriosis* cases through iPHIS and that *Listeria* isolates be sent to the MOHLTC (Lab).
- [55] NML informs MOHLTC that the results from the first available PFGE data for Ontario *Listeria* isolates collected prior to July 31st does not suggest a common source outbreak (clustering) as only 2 of the 13 human *Listeria* isolates have the same DNA fingerprint.
- [56] Slicing dates of product from MLF that tested positive that was collected and analyzed during the week of August 12.

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## THURSDAY, JULY 31

- [57] MOHLTC continues to field calls from PHUs and assist with case management.
- [58] MOHLTC forwards questionnaire and food sampling information sheets for use in prioritizing cases e.g. cold cuts, to PHUs to assist with epidemiological investigation for the *listeriosis* cases. MOHLTC also advises PHUs to collect food samples, providing guidance on how to do this.
- [59] LRS takes note of the 3 positive results in the sampling from the 11 food samples that were received on July 24.

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## FRIDAY, AUGUST 1

- [60] MOHLTC continues to analyze iPHIS data and case files, and identifies 16 cases of *listeriosis* for the month of July. The norm for *listeriosis* cases in July is 5.
- [61] LRS continues to receive samples from Ontario, including samples from Halton Region Health Department.

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## SATURDAY, AUGUST 2

- [62] LRS receives the samples for testing from Halton Region Health Department. (See August 11 for positive results).

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## MONDAY, AUGUST 4

- [63] LRS informs to MOHLTC via email that 3 of the 11 food samples collected July 21 from the Toronto long term care facility have tested positive for *Listeria*. The three positive results come from retention samples from foods prepared on July 13 and July 19.

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## TUESDAY, AUGUST 5

- [64] LRS confirms to MOHLTC via fax that 3 of the 11 food samples collected July 21 from the Toronto long term care facility have tested positive for *Listeria*.
- [65] PHAC receives an update from MOHLTC indicating that 16 cases of *listeriosis* have been confirmed in Ontario during July 2008.

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## WEDNESDAY, AUGUST 6

- [66] TPH informs CFIA of the 3 positive food samples out of the 11 samples collected (see August 4).

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## THURSDAY, AUGUST 7

- [67] OFSR initiates a food safety investigation to determine the extent and source of the potential food hazard. OFSR requests information from TPH and from LRS regarding sample collection practices and testing methodology for the positive samples collected by TPH.
- [68] MLF informed by one of their distributors (Sysco) of an investigation in sliced meat production was underway by TPH. MLF contacted TPH to offer assistance. They were advised that no assistance was needed.
- [69] OFSR received confirmation from TPH that MLF meats were used in the sandwiches that tested positive for *L. monocytogenes* made at the Toronto long term care facility.

- [70] HC provides additional information to CFIA on the samples received from TPH including that samples were from previously-opened products retained and handled by nursing home staff as part of their daily retention protocols and therefore could not be considered aseptic and therefore relied upon as the basis for a HRA and product action.

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## FRIDAY, AUGUST 8

- [71] CFIA conducts a document review at MLF Bartor Rd to determine if the facility was following its food safety plan. No anomalies were noted.

[72] CFIA requests distribution records from MLF but is unable to obtain any because the MLF Sales Office was closed; MLF later informs the CFIA that the required information had already been provided separately to TPH on August 6, 2008.

[73] MLF provides CFIA with specific product information (name, product code, best before dates) for MLF product supplied to the Toronto long term care facility.

[74] CFIA confirms that positive product from the Toronto long term care facility originated at MLF Bartor Rd based on matching product information from a MLF distributor and MLF.

[75] CFIA collects and reviews records from a MLF distributor to identify the specific MLF Products served at the facility.

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## » WEEK OF AUGUST 11

[76] Increase in the positive *Listeria* test results, from line 7 & 8 of the MLF plant's environmental monitoring program.

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## » MONDAY, AUGUST 11

[77] OFSR receives product distribution records from MLF with product codes and best before dates that were used to prepare meals at the Toronto long term care facility in July. Three largest distributors are immediately contacted but have no suspected product left in their possession. CFIA broadens search of suspect product to include other long term care facilities affiliated with the Toronto long term care facility that had the initial *listeriosis* cases to determine whether they have any unopened-package product on hand.

[78] MOHLTC (Lab) reports that two additional food samples, submitted by the Halton Region Health Department (the Burlington Hospital), test positive for *Listeria*.

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## » TUESDAY, AUGUST 12

[79] NML confirms that DNA fingerprinting patterns on human cases from Ontario match patterns identified in cases from other provinces, including Newfoundland & Labrador and Quebec. This represents the first suspicion that a national outbreak might be developing.

[80] Halton Region Health Department issues an advisory to its long-term care facilities.

[81] OFSR informed by MOHLTC that there may be additional cases in 3 other PHUs in Ontario (Peterborough, Simcoe, Etobicoke).

[82] CFIA locates and collects an unopened-package of suspected MLF product for testing from another long term care facility affiliated to the Toronto long term care facility that had the initial *listeriosis* cases. These unopened food samples are forwarded to the lab for testing. CFIA continues to search for samples in nursing homes and other clients of food distributors.

[83] OFSR is notified by Halton Regional Health Department of 2 additional *listeriosis* cases at the Burlington Hospital. Also 2 samples of MLF deli meats served at the hospital tested positive for *L. monocytogenes*. However it is reported that the two patients had not consumed the deli meats and the samples did not contain product code information. Since no scientific link can be established between the Toronto long term care

facility and the Burlington Hospital cases, CFIA initiates a separate food safety investigation. CFIA informs MLF that an investigation has been launched.

**[84]** A MLF distributor informs OFSR based on an internal records review, suspect product associated with two lot codes, were provided to the Burlington Hospital during the time that *listeriosis* illnesses were reported.

**[85]** CFIA informs MLF that an investigation has been launched.

### WEDNESDAY, AUGUST 13

**[86]** MLF sends a letter to distributors informing them they are being investigated by the CFIA, and to place on hold any remaining inventory of “Sure Slice” Roast Beef, Corned Beef and Black Forest Ham. These “Sure Slice” brand products were sold only to institutions (hospitals, long term care facilities, restaurants, hotels, prisons)

**[87]** CFIA initiates a teleconference with PHAC, HC, MOHLTC and Ontario PHUs to review epidemiological information collected to date. Call participants are notified by MOHLTC that additional *listeriosis* cases had been reported to PHUs in Simcoe, Peterborough and Etobicoke. Investigations by those PHUs identified MLF brand as a possible source of the illness. Participants agreed to a large scale sampling plan to cover all “Sure Slice” brand products (with best before dates of August 1 to September 30) produced on two suspect MLF Bartor Rd production lines. This plan was agreed to by MOHLTC and initiated by PHUs.

**[88]** NML also notifies labs across Canada that DNA fingerprinting shows a clustering of human cases with a similar strain in more than one province.

**[89]** Teleconference concluded that further hazard and exposure information was required before HC could initiate a risk assessment and/or CFIA could initiate a recall procedure. No public notification or recall was deemed appropriate by any of the attending groups as the “Sure Slice” products were not sold to the general public and are not able to confirm a definitive link between the illnesses and specific product. Further investigation is still required.

**[90]** After a review of production and distribution records at MLF Bartor Rd, OFSR identified a possible link between the 5 positive samples – the products may all have originated from production lines 8 & 9 at the MLF Bartor Rd.

**[91]** PHAC learns that 5 samples of meat from open packages collected from institutions by local public health officials tested positive for outbreak strain of *L.monocytogenes*.

**[92]** Slicing dates of product from MLF that tested positive that was collected and analyzed during the week of August 12.

**[93]** MOHLTC makes a verbal request to PHUs reporting *listeriosis* cases to immediately start collecting closed samples of “Sure Slice” cold cuts and to submit them to the CFIA laboratory for analysis. PHUs respond immediately.

[94] Federal officials confirm there is a match in the *L. monocytogenes* strain in the product samples as well as the human samples identified in Ontario. DNA fingerprinting between the human cases and the food samples is still being conducted to find a definitive link.

[95] The LRS reports to MOHLTC regarding the PFGE results from food specimens collected as part of the epidemiological investigation. It indicates that PFGE patterns taken from open food samples from the Toronto long-term care home have matched PFGE patterns in two human cases, one from Toronto and one from Halton Regional Health Department. Both cases had been hospitalized at a Burlington Hospital prior to the onset of symptoms. Six other human cases have closely related PFGE patterns.

[96] It was also reported that a further 17 cases of *Listeriosis* were reported in July that were not clinically linked to the illnesses at Toronto long term care facility or at the Burlington Hospital, but the two of these illnesses that were PFGE typed matched the PFGE patterns of the original food samples taken from the Toronto long term care facility.

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## THURSDAY, AUGUST 14

[97] June 17, 2008 death confirmed as being linked to the MLF *listeriosis* outbreak.

[98] TPH asks its inspectors to contact all of their institutions to advise them to refrain from using MLF products, as per MLF's advisory to its customers/distributors on August 13.

[99] PHAC follows up with the Saskatchewan Ministry of Health regarding their cases in that province. A public health alert is drafted and a questionnaire put together to facilitate the standardization of inter-provincial data collection.

[100] MOHLTC holds a teleconference with affected PHUs to advise them of the laboratory results received and the ongoing *listeriosis* outbreak investigation. PHAC asks MOHLTC to send its hypothesis-generating questionnaire to other provinces.

[101] Halton Hills PHU notifies care homes not to consume cold cuts.

[102] CFIA regional staff in collaboration with MOHLTC and Ontario PHUs collect samples of MLF "Sure Slice" products from locations across Ontario over the next two days and submit them to the CFIA's Greater Toronto Area laboratory for analysis over the weekend.

[103] Conference calls led by CFIA continue with PHAC, HC, MOHLTC and PHUs to share information and update regarding the investigation at MLF Bartor Rd. Progress on the execution of the sampling plan to collect samples of "Sure Slice" products is discussed by CFIA. No public notification or recall was deemed appropriate by any of the attending groups.

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## FRIDAY, AUGUST 15

[104] PHAC takes the lead coordinating role in the epidemiological investigation for the *listeriosis* outbreak, as per FIORP, since it had become apparent that the illnesses are distributed nationally.

**[105]** Conference calls lead by the CFIA continue with PHAC, HC, MOHLTC and Ontario PHUs to continue investigating the cause of the outbreak.

**[106]** PHAC issues an alert to all Public Health authorities in Canada to provide an update on the Ontario investigation and requests that health units collect information on consumption of RTE meats for cases that match the DNA fingerprint associated with the outbreak.

**[107]** MOHLTC instructs all PHUs to contact all hospitals, nursing homes, long-term care facilities and retirement homes in Ontario and instruct them to hold suspect product. (Notes no distribution lists are available at this time)

**[108]** CFIA continues to investigate the food sources and related information from the Burlington Hospital. They request and receive menu and deli meat information.

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## ▀ SATURDAY, AUGUST 16

**[109]** CFIA confirms a *L. monocytogenes* positive test result from an unopened package (see August 12) in a product produced at MLF Bartor Rd. The risk assessment determines that “Sure Slice” Roast Beef and Corned Beef meet the criteria for a “Health Risk I”

**[110]** CFIA contacts MLF to inform them the positive samples and that a Health Hazard Alert is being prepared for 2 specific product code of “Sure Slice” products.

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## ▀ SUNDAY, AUGUST 17

**[111]** At 2AM, CFIA issues a Health Hazard Alert warning the public not to consume “Sure Slice” Roast Beef and “Sure Slice” Corned Beef. CFIA states that no confirmed cases of *listeriosis* have been associated with the consumption of the recalled products. This is the first primary recall of MLF brand products. A primary recall indicates a recall of a product sold under the MLF name or one of its subsidiaries.

**[112]** At 3:30AM, MLF announces that it is voluntarily recalling two “Sure Slice” brand products sold in 1 kg packages.

**[113]** CMOH sends a notice alerting all Medical Officers of Health to the hazard and asks that their staff ensure that all products listed in the recall have been removed from their respective long-term care homes and hospitals.

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## ▀ MONDAY, AUGUST 18

**[114]** Epidemiological data from British Columbia identifies a potential link to the outbreak in Ontario.

**[115]** Conference calls led by CFIA continue with PHAC, HC, MOHLTC and PHUs to share information on MLF recall. PHAC chairs the epidemiological data portion of the call.

**[116]** MOHLTC issues a notice to food-recall contacts, directors of inspection and Medical Officers of Health in all PHUs. This notice provides updates on the CFIA Health Hazard Alert and requests assistance from PHUs to check the effectiveness of the food product recall at hospitals and other health care facilities.



[117] PHAC holds an inter-provincial teleconference. CFIA and MOHLTC are invited. CFIA advises that it may request assistance from PHUs to determine the presence of suspected products at local food establishments. CFIA also reports that it is monitoring the effectiveness of the recall in premises such as restaurants and deli counters.

## ■ TUESDAY, AUGUST 19

[118] CFIA issues a Health Hazard Alert advising public not to consume or serve 23 other RTE deli meat products originating from MLF Bartor Rd. This is the second primary recall of MLF brand products.

[119] MLF was made aware by CFIA that two more tests on products produced at different times on the same lines had come back positive. MLF sends a letter to its customers informing them of its expanded recall to include all products produced on lines 8 and 9 from June 2nd.

[120] TPH surveillance alert sent to physicians and facilities.

[121] Conference calls initiated by the CFIA continue with PHAC, HC, MOHLTC and PHUs to share information. PHAC chairs the epidemiological data portion of the call.

[122] At 11am, CFIA reports two more positive results on MLF products from line 9 at MLF Bartor Rd collected August 14 and 15. Results were from product not included in August 17 recall. CFIA technical risk assessors request, from HC, a HRA for all “Sure Slice” meats from lines 8 & 9 in MLF Bartor Rd. Assessment determines that “Sure Slice” products produced in MLF Bartor Rd meet the criteria set by HC for a precautionary “Health Risk I” concern.

[123] PHAC updates its alert to provincial, territorial and local health authorities and requests that all provinces and territories review all cases of *listeriosis* from August 1, 2008.

[124] At 10:25PM, HC advises CFIA that all “Sure Slice” meat products in distribution present a risk to the public. HC indicates that PHAC has been consulting and is in agreement with this assessment.

[125] A HRA is done by HC. The assessment determines that “Sure Slice” products produced at MLF Bartor Rd met the criteria set by HC for a precautionary “Health Risk I” concern.

## ■ WEDNESDAY, AUGUST 20

[126] CFIA initiates verification checks to ensure recalled products have been removed at hospitals, long-term care homes and day cares.

[127] MLF suspends all production at MLF Bartor Rd and announces that it is voluntarily recalling 23 products.

[128] CFIA requires that MLF implement a hold and test protocol whereby no meat product produced at MLF Bartor Rd is made available to the consumer before test results are negative for *L. monocytogenes*.

[129] PHAC issues statement informing Canadians about the public health investigation.

[130] MOHLTC issues a *listeriosis* notice press release.

[131] CMOH advises the public, especially those at high risk for *listeriosis*, such as the elderly, pregnant women and those with weak immune systems, to make sure they avoid consuming the implicated products.

**[132]** CFIA inspectors sampled product from some lines prior to the end of the production run and took environmental swab samples of food contact surfaces in the plant (Note: All of the CFIA sampling results were negative.)

**[133]** Conference calls led by CFIA continue with PHAC, HC, MOHLTC and PHUs to share information on MLF recall. PHAC chairs the epidemiological data portion of the call.

## » THURSDAY, AUGUST 21

**[134]** CFIA receives lab results that indicate 18 “Sure Slice” product samples collected in Ontario have tested positive for *Listeria*. All samples testing positive for *Listeria* are on the current recall lists.

**[135]** CFIA issues an update to the previous day’s warning to clarify best before dates on the 23 previously recalled products.

**[136]** TPH sends out a second surveillance alert sent to physicians and facilities.

**[137]** CMOH holds a press conference to update the media on the outbreak.

**[138]** PHAC requests all provinces and territories to review all cases of *listeriosis* from August 1, 2008.

**[139]** MOHLTC holds provincial teleconference with Ontario PHUs to provide updates on the outbreak. An update on the epidemiological investigation is provided and made available on the Public Health Ontario Portal.

**[140]** Conference calls led by CFIA continue with PHAC, HC, MOHLTC and PHUs to share information on MLF recall. PHAC chairs the epidemiological data portion of the call.

**[141]** Enhanced effectiveness checks are requested by CFIA officials. This includes 100% verification of removal of recalled product, with the assistance of local PHUs, at hospitals, nursing homes and independent grocery stores. Chain stores are checked via a normal verification process.

## » FRIDAY, AUGUST 22

**[142]** PHAC, HC and CFIA hold a joint press conference in Ottawa to alert public about the food safety investigation and to answer questions from the media. (Attendees are senior executives of their departments.)

**[143]** CFIA and Royal Touch Foods issue a Health Hazard Alert regarding seven products sold under the Shopsy’s brand that contain MLF deli meats that may be contaminated. This is the first of the secondary recalls of MLF deli meats. (Secondary recall refers to recall of a product prepared by another company which contains Maple Leaf products as an ingredient.)

**[144]** PHAC activates its Emergency Operations Centre to Level 2 (Increased Vigilance).

**[145]** HC conducts a HRA, indicating that the additional products produced on lines 8 and 9 at MLF Bartor Rd (i.e., products recalled by MLF on August 19 other than “Sure Slice” products) constitute a ‘Health Risk II’.

## ▶ SATURDAY, AUGUST 23

### PHAC SITUATION REPORT UPDATE

21 Confirmed Cases											
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
3		1		16	1						

**[146]** Minister of AAFC holds a press conference assisted by senior executives of PHAC, CFIA and HC (the first of a series of fifteen held by a Cabinet Minister) to announce that two out of three samples of recalled products test positive for the same outbreak strain of *L. monocytogenes*. The third sample is a slight variant. Results are shared with PHAC to compare with human samples.

**[147]** At 9:30PM, joint PHAC/CFIA news release indicates a confirmed link between the *listeriosis* outbreak strain and MLF Bartor Rd products. Lab results establish the link between products recalled by MLF Bartor Rd and the outbreak of *listeriosis* in four provinces. To date, 21 cases of *listeriosis* are confirmed, and the same strain has been detected in four people who have died. A further 30 cases remain under investigation.

**[148]** MLF CEO broadcasts a message to take responsibility following the determination that MLF Bartor Rd is the source of the outbreak. MLF also indicates that they will voluntarily expand their recall to include all 191 items produced at MLF Bartor Rd as a precaution. This is part of the third primary recall of MLF brand products.

**[149]** CFIA requests a HRA from HC on the entire production of MLF Bartor Rd and notifies MLF that assessment is being initiated as part of ongoing communication between the two parties.

**[150]** HC upgrades the HRA done on August 22, from “Health Risk II” to “Health Risk I” based on additional information from MLF Bartor Rd.

**[151]** Conference calls led by CFIA continue with PHAC, HC, MOHLTC and PHUs to share information on MLF recall. PHAC chairs the epidemiological data portion of the call.

## ▶ SUNDAY, AUGUST 24

### PHAC SITUATION REPORT UPDATE

22 Confirmed Cases											
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
3		1		17	1						

**[152]** CFIA issues an expanded Health Hazard Alert to cover all products produced at MLF Bartor Rd back to January 1st, 2008. This is the third primary recall of MLF brand products.

**[153]** MLF issues a press release confirming their voluntarily recall and expands it to include all 191 items produced at MLF Bartor Rd as a precaution. MLF emphasizes that there is no evidence of contamination beyond lines 8 and 9.

**[154]** Minister of Health holds a press conference assisted by senior executives from PHAC, CFIA and HC (the second of a series of fifteen by a Cabinet Minister) to respond to questions regarding outbreak and recall.

**[155]** HC conducts an HRA that determines and concludes that all products produced in MLF Bartor Rd meet the criteria for a “Health Risk I” concern.

**[156]** CFIA identifies that some MLF Bartor Rd product had been shipped to another MLF facility in Quebec (Est. 271B) and initiates a secondary food safety investigation at that facility.

**[157]** Conference calls led by CFIA continue with PHAC, HC, MOHLTC and PHUs to share information on MLF recall. PHAC chairs the epidemiological data portion of the call.

## MONDAY, AUGUST 25

### PHAC SITUATION REPORT UPDATE

26 Confirmed Cases							6 Deaths				
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
4		1		20	1				6		

**[158]** Minister of AAFC, holds a press conference in which technical spokespeople from the CFIA, PHAC and HC respond to questions.

**[159]** CFIA and Lucerne Foods issue a Health Hazard Alert regarding 27 products sold under the Safeway and TakeAwayCafe brands that may contain contaminated MLF deli meats. This is the second secondary recall of MLF brand products.

**[160]** MOHLTC changes its reporting methodology to include all deaths among the *listeriosis* cases linked to the outbreak that had *listeriosis* as the underlying cause of death.

**[161]** PHAC hosts teleconference for: all provincial/territorial public health; environmental health officials; and federal food safety partners to discuss the investigation.

**[162]** A final conference call led by the CFIA with HC, PHAC, MOHLTC and PHUs to share information.

**[163]** CFIA continues with recall effectiveness checks to determine that all recalled product was removed from the marketplace. Approximately 29,000 checks were conducted between August 20th and September 14th.

**[164]** The CFIA receives a HRA from HC on MLF product produced at MLF Bartor Rd.

**[165]** MLF establishes an expert technical review panel to conduct a comprehensive investigation of food safety at MLF Bartor Rd with a mandate to determine root cause and likely source of contamination and to prepare for re-opening. Panel consisted of MLF people and three external experts in *Listeria*.

## TUESDAY, AUGUST 26

### PHAC SITUATION REPORT UPDATE

29 Confirmed Cases							6 Deaths				
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
4		1		22	2				6		

**[166]** CFIA issues two separate Health Hazard Alerts regarding products that may contain contaminated MLF deli meats:

CFIA and Metro Ontario Inc issue an alert regarding 3 products sold under the Fresh 2 Go brand.

CFIA and Atlantic Prepared Foods Limited issue an alert regarding 11 products sold under the Irving,

Sub Delicious and Needs.

This is the third secondary recall of MLF brand products.

**[167]** Minister of AAFC, holds a press conference in which technical spokespeople from the CFIA, PHAC and HC respond to questions.

**[168]** Minister of Health was interviewed by reporters at an event in Denver, Colorado regarding the *listeriosis* outbreak.

**[169]** TPH makes a verbal request to the CFIA to send a Toronto health inspector to accompany the CFIA audit team at the MLF facility (MLF Bartor Rd).

**[170]** PHAC hosts a teleconference with the CMOH and the CFIA to discuss the investigation and further public health actions, including testing guidelines for *listeriosis*.

**[171]** Daily conference calls hosted by PHAC with P/T colleagues, HC and CFIA continue.

**[172]** CFIA requests a HRA from HC for products processed by other food processing establishments either using recalled MLF meat or meat products produced using the same equipment as that used in MLF Bartor Rd. Over the following days, CFIA and HC work to clarify the types of product to be assessed.

## WEDNESDAY, AUGUST 27

### PHAC SITUATION REPORT UPDATE

29 Confirmed Cases						5 Deaths					
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
4		1		22	2				5		

**[173]** CFIA issues two separate Health Hazard Alerts regarding products that may contain contaminated MLF deli meats:

CFIA and Costco Wholesale Canada issue an alert regarding two products sold under the Kirkland Signature brands.

CFIA and Sobeys Inc. issue an alert regarding six products sold in Sobeys' Foodland and IGA stores.

This is the fourth secondary recall of MLF brand products.

**[174]** CPHO issues his first public statement on the outbreak.

**[175]** TPH makes a formal request to CFIA to send a Toronto health inspector to accompany CFIA audit team at MLF Bartor Rd. TPH is provided with a copy of MLF' action plan outlining steps necessary for the re-opening of the facility.

**[176]** Minister of AAFC, holds a press conference in which technical spokespeople from the CFIA, PHAC and HC respond to questions.

**[177]** CPHO participates in CTV National interview.

- [178] The HC *Listeria* ‘Its Your Health’ document was slightly modified and re-posted.
- [179] Daily conference calls hosted by PHAC with P/T colleagues, HC and CFIA continue.
- [180] PHAC hosts a teleconference with TPH and MOHLTC to discuss whether food handlers could have played a role in advancing the outbreak.

CFIA and Loblaw Companies Limited issue an alert regarding 13 products sold at various Loblaws’ stores in Ontario and Quebec.

CFIA and Sobeys Inc issue an alert regarding 33 products sold at various Sobeys’ stores across Canada.

This is the fifth secondary recall of MLF brand products.

## THURSDAY, AUGUST 28

### PHAC SITUATION REPORT UPDATE

29 Confirmed Cases						8 Deaths					
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
4		1		22	2				8		

- [181] CFIA issues five separate Health Hazard Alerts and one expanded Health Hazard Alert regarding products that may contain contaminated MLF deli meats:
  - CFIA and Sobeys Inc. has expanded their alert from August 27 to include two additional products.
  - CFIA and White House Meats Inc. issue an alert regarding one product sold at White House Meats deli counters.
  - CFIA and Delta Country Market issue an alert regarding three products sold at their deli counters.
  - CFIA and Glen Fine Foods issue an alert regarding one product sold through vending machines in Ontario.

[182] Minister of AAFC, holds a press conference in which technical spokespeople from the CFIA, PHAC and HC respond to questions.

[183] CPHO grants Canada AM interview and video posted to PHAC website and YouTube.

[184] HC conducts and issues a HRA indicating that products processed by other establishments that contain recalled MLF meat meet the criteria for a “Health Risk I” concern.

[185] CFIA, HC and PHAC discuss MLF’s environmental investigation, employee issues and food product testing associated with MLF Bartor Rd.

[186] MLF submits, to CFIA, a corrective action plan to mitigate deficiencies identified by the CFIA investigation team for review and approval.

[187] Daily conference calls hosted by PHAC with P/T colleagues, HC and CFIA continue.



## FRIDAY AUGUST 29 TO SEPTEMBER 1

[188] PHAC issues public health notices daily to 123 newspapers across the country.

## FRIDAY, AUGUST 29

### PHAC SITUATION REPORT UPDATE

29 Confirmed Cases							9 Deaths				
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
4		1		22	2		1		8		

[189] CFIA issues five separate Health Hazard Alerts and one updated Health Hazard Alert regarding products that may contain contaminated MLF deli meats:

CFIA and Metro-Richelieu Inc issue an alert regarding three products sold in certain Metro, Richelieu, Ami and Gem stores in Quebec.

CFIA and Sobeys Inc issue an updated alert to clarify distribution information regarding the 33 products from the August 28 alert.

CFIA and Metro Ontario Inc. issues an alert regarding one product sold at some A&P, Dominion, Loeb and The Barn Stores in Ontario.

CFIA and Canada Safeway Limited issue an alert regarding five products sold at Safeway stores in Western Canada and Ontario.

CFIA and Country Traditions Frozen Foods issue an alert regarding three products sold at Country Traditions, Taste of Country and Country Farm Supply stores in Ontario.

CFIA and Co-op Atlantic issue an alert regarding seven products sold at Co-op Atlantic stores.

This is the sixth secondary recall of MLF brand products.

[190] Minister of AAFC, holds a press conference to discuss the outbreak. Technical spokespeople from the CFIA, PHAC and HC respond to questions.

[191] The CFIA hosts a teleconference with PHAC, HC and PHUs and provides an update on the outbreak.

[192] NML has a teleconference with P/T and CMOH to finalize the *cytogenes* clinical laboratory testing guidelines and to discuss recommendations for testing at-risk populations and the general public. The results of this discussion are distributed amongst the community. The *L. monocytogenes* laboratory testing guidelines are posted on the PHAC website on the evening of August 29.

[193] PHAC prepares and distributes to provinces, territories and key partners an updated *Brief Epidemiologic Report*.

[194] Daily conference calls hosted by PHAC with P/T colleagues, HC and CFIA to share information continue.

## ▶ SATURDAY, AUGUST 30

### PHAC SITUATION REPORT UPDATE

29 Confirmed Cases							9 Deaths				
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
4		1		22	2		1		8		

- [195] PHAC posts an updated fact sheet on its website advising pregnant women how to protect themselves from *listeriosis*. PHAC also distributes this fact sheet to health care providers.
- [196] CFIA and King Bean Wholesalers issue a Health Hazard Alert regarding four products under the King Bean brand that may contain contaminated MLF deli meats. This is the seventh secondary recall of MLF brand products.
- [197] Minister of AAFC, holds a press conference to discuss the outbreak. Technical spokespeople from the CFIA, PHAC and HC respond to questions.
- [198] CPHO grants an interview with the Toronto Star (which occurs on September 1).
- [199] CFIA inspections staff and Meat Program specialists visit MLF Bartor Rd to initiate an in-depth review of the plant's standard operating procedures.

## ▶ SUNDAY, AUGUST 31

### PHAC SITUATION REPORT UPDATE

33 Confirmed Cases							11 Deaths				
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
4	2	1		22	2		1	1	9		

- [200] Minister of AAFC, holds a press conference to discuss the outbreak. Technical spokespeople from the CFIA, PHAC and HC respond to questions.

## ▶ MONDAY, SEPTEMBER 1

### PHAC SITUATION REPORT UPDATE

38 Confirmed Cases							12 Deaths				
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
4	2	1		29	2		1	1	10		

- [201] Minister of AAFC, holds a press conference to discuss the outbreak. Technical spokespeople from the CFIA, PHAC and HC respond to questions.
- [202] PHAC prepares and distributes to provinces, territories and key partners an updated *Brief Epidemiologic Report*.

## ▶ TUESDAY, SEPTEMBER 2

### PHAC SITUATION REPORT UPDATE

38 Confirmed Cases							12 Deaths				
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
4	2	1		29	2		1	1	10		

- [203] Minister of AAFC, holds a press conference to discuss the *listeriosis* outbreak and investigation. CPHO and senior HC and CFIA staff participate in the press conference to provide updates and answer questions.
- [204] Daily conference calls hosted by PHAC with P/T colleagues, HC and CFIA to share information continue.

[205] TPH joins the CFIA in-depth review team at MLF Bartor Rd.

[206] Conference call between CFIA and HC, to discuss the sampling proposals from MLF.

### » WEDNESDAY, SEPTEMBER 3

#### PHAC SITUATION REPORT UPDATE

38 Confirmed Cases							13 Deaths				
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
4	2	1		29	2		1	1	11		

[207] Prime Minister calls for an independent inquiry into the outbreak.

[208] The Ontario CMOH posts clinical guidelines for *L.monocytogenes* to health care providers on the MOHLTC website.

[209] Minister of AAFC, holds a press conference to discuss the *listeriosis* outbreak and investigation. CPHO and senior HC and CFIA staff participates in the press conference to provide updates and answer questions.

[210] Daily conference calls hosted by PHAC with P/T colleagues, HC and CFIA to share information continue.

[211] Conference call between CFIA and HC, to discuss the sampling proposals from MLF.

### » THURSDAY, SEPTEMBER 4

#### PHAC SITUATION REPORT UPDATE

38 Confirmed Cases							13 Deaths				
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
4	2	1		29	2		1	1	11		

[212] PHAC posts an updated fact sheet on its website advising seniors how to protect themselves from *listeriosis*. PHAC also distributes this fact sheet to senior organizations and health care providers.

[213] Minister of AAFC, holds a press conference to discuss the outbreak. Technical spokespeople from the CFIA, PHAC and HC respond to questions.

[214] CFIA issues a Health Hazard Alert regarding one product sold at a Canex Retail Supermarket in Newfoundland and Labrador. This is the eighth and final secondary recall of MLF brand products.

[215] PHAC hosts a technical briefing with media on the surveillance systems used to detect and track *Listeria* and other foodborne pathogens.

[216] Teleconference with the CMOH and the CPHO. They discuss policy issues, consumer recommendations and public health advice.

[217] Daily conference calls hosted by PHAC with P/T colleagues, HC and CFIA to share information continue.

## FRIDAY, SEPTEMBER 5

### PHAC SITUATION REPORT UPDATE

38 Confirmed Cases						13 Deaths					
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
4	2	1		29	2		1	1	11		

- [218] Prime Minister's office announces Prime Minister will meet with the Governor General to ask her to dissolve Parliament for an election call.
- [219] CFIA issues an advisory to federally registered establishments processing RTE meats to ensure meat slicers are completely dismantled and cleaned, collect environmental samples to test for *Listeria*, and to review cleaning and disinfecting procedures with the CFIA inspector to ensure proper sanitation of the slicers.
- [220] Minister of AAFC, holds a press conference to discuss the outbreak. Technical spokespeople from the CFIA, PHAC and HC respond to questions.
- [221] Daily conference calls hosted by PHAC with P/T colleagues, HC and CFIA to share information continue.
- [222] MOHLTC holds a provincial teleconference with the PHUs to provide updates on the outbreak.

MOHLTC shares the results of food sample testing received from the CFIA. 116 sample results were received, 68 samples tested positive and 48 negative.

TPH shares its findings from the inspections of the MLF Bartor Rd

- [223] MLF announced that the Expert technical review panel concluded that the most likely source of *Listeria* contamination was deep inside the slicing machines on lines 8 and 9. Other environmental factors may also have contributed to the *Listeria* contamination.
- [224] Expert technical review panel also recommended initiatives to improve the physical and operational systems and processes that contribute to food safety. MLF begins work immediately on these initiatives.
- [225] MLF indicated that CFIA has provided an interim assessment which concurs with many of the findings of the expert technical review panel.
- [226] Company submits 7 day start-up plan to CFIA.
- [227] HC provides a sampling plan established to sample all of the recalled product from August 17, 19 and 24. These minimum sampling requirements are sent to CFIA, and then forwarded to Maple Leaf Foods.

## SATURDAY, SEPTEMBER 6

### PHAC SITUATION REPORT UPDATE

38 Confirmed Cases						13 Deaths					
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
4	2	1		29	2		1	1	11		

**[228]** The Minister of AAFC, holds a press conference assisted by senior executives of PHAC, CFIA and HC (the last of a series of fifteen) to respond to questions.

**[229]** Prime Minister announces an investigation into the *L. monocytogenes* outbreak.

**[235]** Anticipation of the resumption of production at MLF Bartor Road, the CFIA begins an in-depth review to assess the establishment's suitability for resumption of operations. Four corrective action requests are identified by the CFIA inspection team.

**[236]** CFIA meets with MLF to discuss disposal plan.

## MONDAY, SEPTEMBER 8

### PHAC SITUATION REPORT UPDATE

38 Confirmed Cases						13 Deaths					
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
4	2	1		29	2		1	1	11		

**[230]** Federal Election called.

**[231]** PHAC posts an updated fact sheet on its website advising those with weakened immune systems about how to protect themselves from *listeriosis*. PHAC also distributes this fact sheet to TB and HIV/AIDS distribution lists.

**[232]** PHAC's Emergency Operations Centre is deactivated to Level 1 (Normal Readiness)

**[233]** Teleconferences with P/Ts to discuss the epidemiology of the outbreak are reduced from daily to every other day.

**[234]** PHAC prepares and distributes to provinces, territories and key partners an updated *Brief Epidemiologic Report*.

## TUESDAY, SEPTEMBER 9

### PHAC SITUATION REPORT UPDATE

38 Confirmed Cases						14 Deaths					
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
4	2	1		29	2		1	1	12		

**[237]** CFIA HQ distributes a memorandum regarding Task 1401 (Meat Slicing Equipment Sanitation) to CFIA field staff for immediate implementation. This CVS task was created to direct a survey targeted at all federally registered RTE meat establishments and required a verification activity to evaluate the effectiveness of an operator's HACCP system, focusing on sanitation in post-cook area.

**[238]** The CFIA issues a new compliance verification task procedure as a follow-up to the September 5th advisory to federally inspected plants that addresses:

1. review of written sanitation program
2. on-site review of the sanitation operations and
3. on-site review of pre-operational sanitation.

## » WEDNESDAY, SEPTEMBER 10

### PHAC SITUATION REPORT UPDATE

42 Confirmed Cases							15 Deaths				
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
4	2	1		33	2		1	1	13		

[239] OMAFRA forwards the CFIA advisory on cleaning and sanitation to all provincially licensed plants.

[240] MOHLTC hosts a provincial teleconference and advises PHUs about TPH's visits to the plant and informs them that a CFIA audit team is also present at the plant.

[241] Daily conference calls hosted by PHAC with P/T colleagues, HC and CFIA to share information continue.

## » THURSDAY, SEPTEMBER 11

### PHAC SITUATION REPORT UPDATE

44 Confirmed Cases							16 Deaths				
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
4	2	1	1	34	2		1	1	14		

[242] CFIA informs MOHLTC that the effectiveness checks with respect to MLF in Ontario have been completed.

## » FRIDAY, SEPTEMBER 12

### PHAC SITUATION REPORT UPDATE

45 Confirmed Cases							16 Deaths				
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
4	2	1	1	35	2		1	1	14		

[243] MOHLTC holds a provincial teleconference with all PHUs to update them on the *listeriosis* outbreak.

[244] MOHLTC introduces and discusses institutional questionnaire. MOHLTC circulates an institutional questionnaire to all health units with outbreak-related cases that resided in a long-term care home, retirement home and/or hospital requesting feedback. The questionnaire is designed to solicit more comprehensive information on the outbreak.

[245] PHAC prepares and distributes to provinces, territories and key partners an updated *Brief Epidemiologic Report*.

## » MONDAY, SEPTEMBER 15

[246] CFIA Headquarters distributes new directives to field staff re: Audit approach for RTE plants:

#### 1. Current Issue Task 1402 (Premises Sanitation)

For all federally registered RTE meat establishments to evaluate the effectiveness of an operator's HACCP system focusing on sanitation in post-cook area.

#### 2. Current Issue Task 1403 (Sampling Program Survey)



A one-time CVS inspection and sampling task used to survey establishments in order to gather information regarding operator biological pathogen controls.

3. The CVS inspection and sampling Tasks 3106 and 3107 (Risk-based Sampling in US-eligible Establishments)

[247] Daily conference calls hosted by PHAC with P/T colleagues, HC and CFIA to share information continue.

## ▶ TUESDAY, SEPTEMBER 16

### PHAC SITUATION REPORT UPDATE

47 Confirmed Cases							16 Deaths				
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
4	2	1	1	36	2	1	1	1	14		

[248] MLF provides the CFIA's Ontario Area Office with a summary of its proposed action plan in anticipation of the restarting of operations at MLF Bartor Rd. The MLF document includes the results of the company-led investigation to identify the cause of the *Listeria* contamination.

### MLF BARTOR RD PLANT RE-OPENS

## ▶ WEDNESDAY, SEPTEMBER 17

### PHAC SITUATION REPORT UPDATE

47 Confirmed Cases							17 Deaths				
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
4	2	1	1	36	2	1	1	1	14		1

[249] MLF receives CFIA's approval to restart operations at the MLF Bartor Rd which were suspended on August 20th.

[250] MLF resumed limited production under the following conditions:

Test and hold protocols to be in place for the first six weeks of operation.

Re-testing and corrective action, if required, of all previously positive food contact surfaces.

Submission in advance of *Listeria* sampling schedules to the CFIA responsible inspector.

Environmental sites to be predetermined with CFIA input and production schedules to be supplied. Explicit directives from the CFIA on environmental *Listeria* sampling to be followed.

All lab results for *Listeria* sampling, including immediate notification of positive results, must be provided to the CFIA.

The release of all RTE products would require prior CFIA approval.

## ▶ THURSDAY, SEPTEMBER 18

### PHAC SITUATION REPORT UPDATE

47 Confirmed Cases							17 Deaths				
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
4	2	1	1	36	2	1	1	1	14		1

## FRIDAY, SEPTEMBER 19

### PHAC SITUATION REPORT UPDATE

48 Confirmed Cases							18 Deaths				
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
5	2	1	1	36	2	1	2	1	14		1

[251] PHAC prepares and distributes to provinces, territories and key partners an updated *Brief Epidemiologic Report*.

## TUESDAY, SEPTEMBER 23

### PHAC SITUATION REPORT UPDATE

48 Confirmed Cases							18 Deaths				
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
5	2	1	1	36	2	1	2	1	14		1

## WEDNESDAY, SEPTEMBER 24

### PHAC SITUATION REPORT UPDATE

48 Confirmed Cases							18 Deaths				
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
5	2	1	1	36	2	1	2	1	14		1

[252] First set of CFIA environmental swabs negative. This sampling program continues on a daily basis.

## THURSDAY, SEPTEMBER 25

### PHAC SITUATION REPORT UPDATE

48 Confirmed Cases							18 Deaths				
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
5	2	1	1	36	2	1	2	1	14		1

## FRIDAY, SEPTEMBER 26

### PHAC SITUATION REPORT UPDATE

49 Confirmed Cases							19 Deaths				
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
5	2	1	1	36	3	1	2	1	14	1	1

## MONDAY, SEPTEMBER 29

### PHAC SITUATION REPORT UPDATE

49 Confirmed Cases							19 Deaths				
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
5	2	1	1	36	3	1	2	1	14	1	1

## THURSDAY, OCTOBER 2

### PHAC SITUATION REPORT UPDATE

53 Confirmed Cases							20 Deaths				
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
5	2	1	1	40	3	1	2	1	15	1	1

[253] Letter to company for product release for production dates of September 19 to 23 only.

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### » FRIDAY, OCTOBER 3

[254] PHAC prepares and distributes to provinces, territories and key partners an updated *Brief Epidemiologic Report*.

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### » TUESDAY, OCTOBER 7

[255] Positive test on food contact surface found for a sample taken October 1 (*list spp*). Further testing required of environmental sample to determine subspecies (i.e. if *L. monocytogenes*). Much communication regarding positive result. 4 products from line 7 and 8 test positive for *L. monocytogenes* from products from September 29 and 30.

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### » WEDNESDAY, OCTOBER 8

[256] MLF and CFIA announce that four end product samples have tested positive for *L. monocytogenes*. None of the affected product had been released for sale. Increased *L. monocytogenes* testing continues in the facility.

[257] HC issues a precautionary “Health Risk I” assessment for product manufactured the week prior to the positive results. CFIA issues a Class 1 recall to distributors to ensure the product is not made available to consumers. A subsequent HRA conducted by HC determined that the product posed no health risk.

[258] MLF submits plan to sample detained product over the next 2 week period for legal purposes.

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### » FRIDAY, OCTOBER 10

[259] Memorandum regarding current issue Task 1404 Operator Environmental and Product testing for *Listeria* distributed to CFIA field staff.

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### » FRIDAY, OCTOBER 17

[260] CFIA approves the release of product produced between September 19 to 25 at the MLF Bartor Rd, except for product produced on line 7.

[261] Information posted on CFIA’s website regarding the re-opening of MLF Bartor Rd.

[262] A HRA conducted by HC determined that the products manufactured on Line 7 at MLF Bartor Rd between September 19 and October 7 are suspect, and if distributed to the consumer, would be considered a “Health Risk I” situation.

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### » SUNDAY, OCTOBER 19

[263] Advice on Food Safety posted by CPHO.

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### » MONDAY, OCTOBER 20

[264] CFIA announced that MLF Bartor Rd products with satisfactory *L. monocytogenes* test results could be released for distribution. Test and hold protocols continue at MLF Bartor Rd as does enhanced inspection presence.

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### » TUESDAY, OCTOBER 21

[265] Product starts to be shipped to customers, with exception of Line 7 production.

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### » WEDNESDAY, OCTOBER 22

[266] MLF considers the crisis over.

[267] MLF begins distributing foods manufactured at its MLF Bartor Rd for public consumption.

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## FRIDAY, NOVEMBER 14

[268] MOHLTC discontinues Enhanced Surveillance Directive for *L. monocytogenes*. that was distributed to PHUs.

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## MONDAY, DECEMBER 8

[269] Ontario's CMOH declares the *listeriosis* outbreak over in Ontario.

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## WEDNESDAY, DECEMBER 17

[270] Disposal of 100% of the recalled product complete. 1.3 million kg of product was properly disposed of under supervision of CFIA and Ontario Ministry of Environment.

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## THURSDAY, DECEMBER 18

[271] Three class action suits were settled for up to \$27 million, subject to court approval.

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## JANUARY 1, 2009

[272] The latest expiry date found on the recalled products.

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## APRIL 17, 2009

### PHAC SITUATION REPORT UPDATE

57 Confirmed Cases							22 Deaths				
BC	AB	SK	MB	ON	QC	NB	BC	AB	ON	QC	NB
5	2	2	1	41	5	1	2	1	16	2	1





# Appendix C

Progress to date as reported by the organizations



IN PROGRESS	COMPLETED	RECOMMENDATIONS OF THIS REPORT
<b>Policies</b>		
<p><i>Public Health Agency of Canada</i></p>	<p>Following the 2008 outbreak, listeriosis has been included in the new set of diseases to be reported to PHAC.</p> <p>All provinces and territories have agreed to implement notification as soon as possible. They are at different stages of implementation since making adjustments to reporting and notification systems takes time.</p> <p>Once all jurisdictions have completed the necessary steps, all future listeriosis cases in Canada will be reported to the Canadian Notifiable Diseases Surveillance System, most likely before the end of 2009.</p>	
<p><i>Health Canada</i></p>		<p>In September 2008, Health Canada, under the provisions of the <i>Food and Drugs Act</i>, issued Interim Market Authorizations to allow the use of sodium acetate and sodium diacetate for meat, poultry, and fish products to help slow the growth of <i>Listeria</i>.</p>
	<p>In March 2009, Health Canada published the Regulatory Modernization Strategy for Food and Nutrition, which articulates its role in food safety and nutrition, and outlines a vision and plan to modernize the regulatory system. The plan will be completed in summer 2009.</p>	<p>See recommendation 12</p>

IN PROGRESS	COMPLETED	RECOMMENDATIONS OF THIS REPORT
	<p>Health Canada has taken a number of steps to further standardize the Health Risk Assessment request process. It has</p> <ul style="list-style-type: none"> <li>» revised its Standard Operating Procedures from 24 hours to an 8-hour turnaround time for anticipated Health Risk 1 requests (the most severe risk which could lead to widespread human impact or death);</li> <li>» increased capacity and training;</li> <li>» established a central logging and tracking system;</li> <li>» identified a single point of contact for microbiology, nutrition and chemical safety issues; and,</li> <li>» made arrangements to ensure response 24/7 in emergency situations.</li> </ul>	
<p>Health Canada's 2004 <i>Listeria</i> policy is undergoing revision to be finalized by March 2010 to reflect the latest knowledge and scientific advances in the field. Controls and inspection practices, use of additives and technologies that can inhibit the growth of <i>Listeria</i>, and the needs of vulnerable populations are being considered.</p>		<p>See recommendation 11</p>

IN PROGRESS	COMPLETED	RECOMMENDATIONS OF THIS REPORT
<b>Surveillance and Laboratories</b>		
<b>SURVEILLANCE</b>		
<i>Public Health Agency of Canada</i>	The Public Health Agency of Canada has acted to improve the capacity of PulseNet by training and certifying personnel in a number of provincial and federal laboratories across Canada.	
	Since the outbreak, the PHAC's National Microbiology Laboratory has trained and certified one laboratory person in the province of Alberta and two in Ontario. Four additional CFIA laboratory personnel have also been certified. NML has increased its own number of certified laboratory personnel from three to seven.	<i>See recommendation 35</i>
	PHAC is also working on the development of another surveillance instrument tool – Panorama.	<i>See recommendation 22</i>

	IN PROGRESS	COMPLETED	RECOMMENDATIONS OF THIS REPORT
<b>LABORATORIES</b>			
<i>Health Canada</i>	Health Canada is working to increase surge capacity in its lab testing functions, like the Listeria Reference Centre. This means ensuring that there are enough people to meet demand in urgent situations. It is enhancing its laboratory capacity by increasing training and cross-training of laboratory technicians. Already, three individuals are in the process of being certified for Pulsed-Field Gel Electrophoresis (PFGE) testing, and the current <i>E. coli</i> technician has been cross-trained to test for <i>Listeria</i> .		
<i>Public Health Agency of Canada</i>		The PHAC's National Microbiology Laboratory has taken action to improve its own laboratory capacity. In addition to increasing the Lab's number of certified personnel in <i>Listeria</i> genetic fingerprinting, NML has doubled its PFGE equipment in the PulseNet Canada Lab and has formalized back-up PFGE units.	
<i>Canadian Food Inspection Agency</i>		Investments have been made in new equipment for the CFIA's laboratories to expand their testing capacity.	

IN PROGRESS	COMPLETED	RECOMMENDATIONS OF THIS REPORT
	<p>Health Canada's 2004 <i>Listeria</i> policy is undergoing revision to be finalized by March 2010 to reflect the latest knowledge and scientific advances in the field. Controls and inspection practices, use of additives and technologies that can inhibit the growth of <i>Listeria</i>, and the needs of vulnerable populations are being considered.</p>	<p>See recommendation 11</p>

## Surveillance and Laboratories

### SURVEILLANCE

<p><i>Public Health Agency of Canada</i></p>		<p>The Public Health Agency of Canada has acted to improve the capacity of PulseNet by training and certifying personnel in a number of provincial and federal laboratories across Canada.</p>
		<p>Since the outbreak, the PHAC's National Microbiology Laboratory has trained and certified one laboratory person in the province of Alberta and two in Ontario. Four additional CFIA laboratory personnel have also been certified. NML has increased its own number of certified laboratory personnel from three to seven.</p>
	<p>PHAC is also working on the development of another surveillance instrument tool – Panorama.</p>	<p>See recommendation 22</p>

	IN PROGRESS	COMPLETED	RECOMMENDATIONS OF THIS REPORT
<b>LABORATORIES</b>			
<i>Health Canada</i>	Health Canada is working to increase surge capacity in its lab testing functions, like the Listeria Reference Centre. This means ensuring that there are enough people to meet demand in urgent situations. It is enhancing its laboratory capacity by increasing training and cross-training of laboratory technicians. Already, three individuals are in the process of being certified for Pulsed-Field Gel Electrophoresis (PFGE) testing, and the current <i>E. coli</i> technician has been cross-trained to test for <i>Listeria</i> .	CFIA has improved its communications with HC and PHAC laboratories and introducing a screening method for <i>Listeria monocytogenes</i> in meat which allows for the reporting of negative results in only five days.	See recommendation 35
<i>Public Health Agency of Canada</i>		The PHAC's National Microbiology Laboratory has taken action to improve its own laboratory capacity. In addition to increasing the Lab's number of certified personnel in <i>Listeria</i> genetic fingerprinting, NML has doubled its PFGE equipment in the PulseNet Canada Lab and has formalized back-up PFGE units.	
<i>Canadian Food Inspection Agency</i>		Investments have been made in new equipment for the CFIA's laboratories to expand their testing capacity.	

IN PROGRESS	COMPLETED	RECOMMENDATIONS OF THIS REPORT
	<p>The CFIA, with HC and the PHAC, have developed a standard template for use by F/P/T food safety partners. The template includes all the required information for sampling. CFIA has also developed training material for inspectors on sampling.</p>	<p>See recommendation 35</p>
	<p>The CFIA has improved its communications with HC and the PHAC laboratories and introducing a screening method for <i>Listeria monocytogenes</i> in meat which allows for the reporting of negative results in only five days.</p>	<p>See recommendation 36</p>
	<p>In conjunction with the Standards Council of Canada (SCC) a forum has been established to promptly share CFIA requirements with private accredited labs through information bulletins.</p>	

### Foodborne Emergency Preparedness and Response

#### AMONG FEDERAL ORGANIZATIONS

	<p>The PHAC, HC and the CFIA are critically assessing the Foodborne Illness Outbreak Response Protocol (FIORP) in light of the recent event, to present a proposal to their provincial and territorial counterparts.</p>	<p>Consistent communication among the CFIA, the PHAC and HC is taking place through regular senior management meetings between Assistant Deputy Ministers in each organization.</p>	<p>See recommendation 24</p>
<p>Health Canada</p>		<p>Health Canada has set up a single point of contact for the rapid flow of information among partners and has increased Health Canada's email capacity for key operational personnel.</p>	



	IN PROGRESS	COMPLETED	RECOMMENDATIONS OF THIS REPORT
	Health Canada continues to work with the Council of Chief Medical Officers of Health to develop key health advice on listeriosis for at risk groups and caregivers.	Health Canada has enhanced risk communications to the public through wider distribution of communications products to stakeholders that can assist with disseminating information to at-risk populations.	
<i>Public Health Agency of Canada</i>		The PHAC has made progress in clarifying the scope of Health Canada's and the CFIA's involvement in the Agency's Emergency Operations Centre during outbreaks.	<i>See recommendation 28</i>
		The PHAC's Centre for Emergency Preparedness and Response is improving clarity regarding the purpose of calls, who should be attending them, and how to communicate discussions and decisions. Templates and standard operating procedures have been developed.	<i>See recommendation 24</i>
<i>Canadian Food Inspection Agency</i>	The CFIA is updating its Food Emergency Response Manual with respect to roles and responsibilities and has enhanced decision-making for non-routine cases.	The criteria and process for identifying and managing high-profile incidents has been reviewed and revamped. The CFIA will now use its emergency response structure to manage high-profile issues, including significant food safety incidents.	<i>See recommendation 28</i>
		The Office of Emergency Management has provided incident command system training for staff involved in food safety incidents, with ongoing sessions planned.	

IN PROGRESS	COMPLETED	RECOMMENDATIONS OF THIS REPORT
<b>AMONG FOOD SAFETY PARTNERS</b>		
<i>Canadian Food Inspection Agency</i>	The CFIA is working to increase provincial/territorial awareness of its roles and responsibilities when responding to foodborne illness outbreaks. For instance, The CFIA is part of the Ontario Multi-Agency Foodborne Outbreak/Food Recall Working Group, established to improve multi-jurisdictional coordination and response to health hazards and foodborne outbreaks.	<i>See recommendation 38</i>
<b>FOOD SAFETY</b>		
<i>Canadian Food Inspection Agency</i>	<p>The Meat Hygiene Manual of Procedures and the Compliance Verification System (CVS) have been updated to reflect that in September 2008:</p> <ul style="list-style-type: none"> <li>» an industry advisory notification was issued for the proper cleaning and sanitation of slicing equipment; and</li> <li>» inspection procedures were strengthened and inspection tasks were added: <ul style="list-style-type: none"> <li>» review company records of finished product and environmental test results on a daily basis;</li> <li>» review cleaning and sanitation programs to control bacteria and other foodborne diseases;</li> <li>» analyze trends in positive environmental test results; and</li> <li>» increase the frequency of on-site inspections.</li> </ul> </li> </ul>	<i>See recommendations 16 to 20</i>

IN PROGRESS	COMPLETED	RECOMMENDATIONS OF THIS REPORT
	<p>As of April 2009, the section of the Meat Hygiene Manual of Procedures on <i>Listeria</i> was updated:</p> <ul style="list-style-type: none"> <li>» Meat processors must implement food contact surface testing programs in accordance with the prescribed requirements;</li> <li>» Meat processors must perform trend analysis on their test results;</li> <li>» Plant operators must notify the CFIA immediately of any <i>Listeria</i> positive food contact surface area test results;</li> </ul> <p>As of April 2009, the CFIA had implemented a food contact surface testing plan in meat processing plants.</p>	<p>See recommendation 15</p>
<p>The CFIA has requested from its Academic Advisory Panel to provide advice on emerging and changing risks in the food production system.</p>		
<p>The CFIA has begun the process of evaluating meat inspection programs for imports for the control of <i>Listeria monocytogenes</i> in ready-to-eat meat products.</p>		

IN PROGRESS	COMPLETED	RECOMMENDATIONS OF THIS REPORT
<i>Maple Leaf Foods</i>	Maple Leaf Foods has implemented all of the requirements under the CFIA's Corrective Action Plan as well as the Agency's new policies. In several instances, the company has activated measures that go beyond the minimum requirements in an effort to prevent a reoccurrence of the events of the summer of 2008.	<i>See recommendations 1 to 6</i>
	<p>Maple Leaf Foods has improved food safety in all of its ready-to-eat plants by taking four essential steps. It has</p> <ul style="list-style-type: none"> <li>» developed comprehensive Enhanced Food Safety Protocols;</li> <li>» improved daily sanitization procedures, such as machinery disassembly and deep cleaning of slicing equipment;</li> <li>» implemented a more rigorous environmental testing regimen;</li> <li>» required that all employees entering their plants wear shrouds, masks, aprons and sleeves;</li> <li>» improved the physical infrastructure of buildings;</li> <li>» created the position of Chief Food Safety Officer;</li> <li>» established a Maple Leaf Foods Food Safety Council comprising leading international experts in food safety, microbiology, and public health; and</li> <li>» increased collaboration with government and industry to improve food safety across the industry.</li> </ul>	<i>See recommendations 1 to 6</i>

IN PROGRESS	COMPLETED	RECOMMENDATIONS OF THIS REPORT
	<p>The company's Food Safety First program – probably the most important part of its post-outbreak food safety enhancement – consists of a four-part cycle: 1) Interpret; 2) Remediate; 3) Act; and 4) Audit</p>	<p><i>See recommendations 2</i></p>
<p><i>Canadian Meat Council</i></p>	<p>The Canadian Meat Council is leading the Industry <i>Listeria</i> Working Group which is working on the development of a best practices document that reflects revisions of the CFIA's <i>Listeria</i> control measures for ready-to-eat meat products.</p>	<p><i>See recommendations 3</i></p>





# Appendix D

## List of Interviewees



# List of Meetings

## MEETINGS BY INDIVIDUAL:

- » **Dr. Merv Baker**, Canadian Meat Council
- » **Yaprak Baltacioglu**, Former Deputy Minister, AAFC
- » **Jane Billings**, Sr. ADM, PHAC &  
**Nancy Porteous**, Dir. Eval., Centre for Excellence and Program Design
- » **Dr. David Butler-Jones**, Chief Public Health Officer, PHAC
- » **Robert Clarke**, Former ADM, PHAC (Retired)
- » **David Cutler**, CEO, Leisure World
- » **Ronald Doering**, Gowling Consultants,  
Former President of CFIA
- » **Barbara Drew**, CEO/Exec, Dir, CMA &  
**Dr. Briane Scharfstein**, Assoc. Sec. Gen, Prof. Affairs
- » **Dr. Brian Evans**, Executive Vice President, CFIA
- » **Dr. Jeff Farber**, Director of Microbial Hazards,  
Health Canada
- » **Ian Green**, Formerly Deputy Minister for Health Canada  
(currently retired)
- » **François Guimont**, Deputy Receiver General of Canada  
(formerly Pres. CFIA)
- » **Dr. Rick Holley**, CFIA Advisory Member
- » **Randy Huffman**, Maple Leaf Foods
- » **Nick Jennery**, Canadian Council of Grocery Distributors
- » **Bob Kingston**, PSAC Agriculture Union President &  
**Jim Thompson**, Communications Advisor, PSAC Union
- » **Michael McCain**, President, Maple Leaf Foods
- » **Marie-Lucie Morin**, National Security Advisor to the PM  
and Assoc. Secretary, PCO
- » **Dr. Frank Plummer**, Scientific Director General &  
**Dr. Céline Nadon**, PHAC Microbiology Lab
- » **Cameron Prince**, VP Operations, CFIA
- » **The Professional Institute of the Public Service of  
Canada (PIPSC)**
  - » **Gary Corbett**, President
  - » **Geoffrey Grenville-Wood**, Legal Counsel
  - » **Isabelle Roy**, Legal Counsel

- » **Johanne Bray**, Manager of Policy and National  
Representational Activities
- » **Minister Gerry Ritz**, Federal Minister for Agriculture
- » **Morris Rosenberg**, Deputy Minister Health Canada
- » **Yvan Roy**, Counsel to the Clerk of the Pricy Council, PCO
- » **Ron Sapsford**, Deputy Minister, Health & Long-Term Care,  
Ontario
- » **Ian Shugart**, Deputy Minister, Environment Canada
- » **Anne Marie Smart**, Assistant Secretary to the Cabinet,  
Communications and Consultations, PCO
- » **Carole Swan**, President, CFIA
- » **Suzanne Vinet**, Assoc. Deputy Minister, Transport  
(formerly Assoc. DM Health Canada)
- » **Dr. David Williams**, A/Chief Medical Officer of Health,  
Ontario

## PRESENTATIONS BY ORGANIZATION:

- » **Tour of Maple Leaf Plant**
- » **CFIA Presentation re Cognos Based Fish Program  
Management Information System**
- » **CFIA Presentation re Compliance and Enforcement**
- » **CFIA Presentation re HACCP/CVS**
- » **CFIA Presentation re Recall**
- » **Visit to CFIA's Emergency Operations Centre**
- » **Health Canada Presentation re Modernization of  
Food and Drug Act**
- » **Health Canada Presentation re Regulatory Systems  
for Additives**
- » **PHAC Presentation re FIORP**
- » **Visit to PHAC's Emergency Operations Centre**
- » **Formax Meat Slicing Equipment**
  - » **Dave Brown**, Vice-President, Sales
  - » **Bob Carson**, Legal Counsel
  - » **Bill Dickover**, Vice-President Customer Services
- » **Meetings with Family Members**

# Roundtables

## ADVISORY GROUP OF EXPERTS

- » **Dr. John Carsley**
- » **Dr. Michael Doyle**
- » **Dr. Mansel Griffiths**
- » **Dr. Walter Schlech**
- » **Dr. Bruce Tompkin**

## CFIA ADVISORY PANEL ROUNDTABLE DISCUSSION

- » **Dr. Rick Holley**, Canadian Poultry & Egg Processors Council
- » **Carole Swan**, President, Canadian Food Inspection Agency

## CONSUMER GROUPS ROUNDTABLE DISCUSSION

- » **Bruce Cran**, Consumers Association of Canada
- » **François Décary-Gilardeau**, Option Consommateurs
- » **Lucienne Lemire**, Consumers Council of Canada

## FEDERAL, PROVINCIAL, TERRITORIAL ROUNDTABLE WITH DEPUTY MINISTERS OF HEALTH AND CHIEF MEDICAL OFFICERS

- » **Dr. Horacio Arruda**, Director Public Health Protection, Québec
- » **Meena Ballantyne**, Assistant Deputy Minister, Health Products and Food Branch, Health Canada
- » **Dr. David Butler-Jones**, Chief Public Health Officer, Public Health Agency of Canada
- » **Lauren Donnelly**, Assistant Deputy Minister Health Prevention, Saskatchewan
- » **Dr. Kami Kandola**, A/Chief Medical Officer of Health, Northwest Territories
- » **Don Keats**, Deputy Minister of Health and Community Services, Newfoundland
- » **Dr. Perry Kendall**, Provincial Health Officer, BC

- » **Dr. Joel Kettner**, Chief Public Health Officer and Chief Medical Officer of Health, Manitoba
- » **Alex MacKenzie**, Executive Director of Surveillance and Environmental Health, Alberta Health and Wellness
- » **Scott MacLean**, Executive Director of Health Protection Programs, New-Brunswick
- » **Dr. Duff Montgomerie**, Deputy Minister of Health Promotion and Protection, Nova Scotia
- » **Ryan Neale**, Environmental Health Officer, Prince Edward Island
- » **Joanna Plater**, Executive Director, Manitoba Health and Healthy Living
- » **Dr. Mark Raizenne**, Director General, Centre for Food-Borne and Environmental and Zoonotic Infectious Diseases, Public Health Agency of Canada
- » **Ron Sapsford**, Deputy Minister, Health and Long-Term Care, Ontario
- » **Dr. Richard Schabas**, Medical Officer of Health, Ontario
- » **Dr. Robert Strang**, Chief Public Health Officer and Chief Medical Officer of Health, Nova Scotia
- » **Dr. Faith Stratton**, Chief Medical Officer of Health, Newfoundland
- » **Arlene Wilgosh**, Deputy Minister of Health, Manitoba
- » **Dr. David Williams**, Chief Medical Officer of Health, Ontario

## FOOD PROCESSING GROUPS ROUNDTABLE DISCUSSION

- » **Robert De Valk**, Further Poultry Processors of Canada
- » **Robin Hoel**, Canadian Poultry and Egg Processors Council
- » **Chris Kyte**, Food Processors of Canada
- » **Jim Laws**, Canadian Meat Council

## URBAN PUBLIC HEALTH NETWORK

- » **Dr. David Allison**, Medical Officer of Health, Eastern Health, St. John's
- » **Dr. Tania Diener**, Medical Health Officer, Regina Qu'appelle Health Region
- » **Dr. Maurice Hennink**, Deputy Medical Health Officer, Regina Qu'appelle Health Region
- » **Dr. Patricia Hudson**, A/Director, Montérégie Public Health
- » **Dr. James Lu**, Medical Health Officer, Vancouver Coastal Health
- » **Dr. Judy MacDonald**, Deputy Medical Officer of Health Alberta
- » **Dr. David McKeown**, Medical Officer of Health, Toronto Public Health
- » **Dr. Terry-Nan Tannenbaum**, Public Health, Montreal
- » **Dr. Gaynor Watson-Creed**, Medical Officer of Health, Capital District Health Authority
- » **Dr. Babara Yaffe**, Associate Medical Officer of Health, Toronto Public Health

## List of Investigative Meetings by Organization

### MINISTERS AND DEPUTY MINISTERS AND STAFF

- » **The Honourable Gerry Ritz**, Minister and Yaprak Baltacioglu, Deputy Minister, Agriculture and Agri-Food Canada
- » **The Honourable Tony Clement** (formerly Minister of Health) & Morris Rosenberg, Deputy Minister, Health Canada
- » **Carole Swan**, President, Canadian Food Inspection Agency
- » **Alan Sakach**, Media Officer PMO (formerly Director of Communications for Minister Ritz)

## CANADIAN FOOD INSPECTION AGENCY (CFIA)

- » **Paul Mayers**, Associate Vice President, Programs, CFIA
- » **Brian Evans**, Executive Vice President, CFIA
- » **Cameron Prince**, Vice President, Operations, CFIA
- » **Dr. Martine Dubuc**, Vice President, Science, CFIA
- » **Mario Zalac**, Food Processing Specialist Inspector, CFIA
- » **David Engel**, Food Processing (FSEP) Supervisor, CFIA
- » **Dan Schlegel**, Food Processing Inspector, CFIA
- » **Dave Gagnon**, FSEP/HACCP Area Coordinator, CFIA
- » **Alex Radoja**, Inspection Program Officer, CFIA
- » **Carlo Pernarella**, Food Processing Specialist Inspector, CFIA
- » **Laurel Herwig**, Director, Programs Communications, CFIA
- » **Catherine Airth**, Associate Vice-President, Operations, CFIA
- » **Vance McEachern**, Executive Director, Operations Strategy and Delivery, CFIA
- » **Richard Arsenault**, Director, Meat Programs Division, CFIA
- » **Judy Strazds**, Inspection Manager, CFIA
- » **Bill Teeter**, Executive Director, Ontario Operations, CFIA
- » **Urszula Sierpinska**, Food Specialist, CFIA
- » **Don Irons**, Food Processing Supervisor, CFIA
- » **Tom Graham**, National Inspection Manager FSEP/HACCP, CFIA

### HEALTH CANADA

- » **Dr. Jeff Farber**, Director, Bureau of Microbial Hazards, Health Canada
- » **Hélène Couture**, Chief Evaluations Division, Health Canada
- » **Dr. Franco Pagotto**, Research Scientist, Health Canada
- » **Meena Ballantyne**, Assistant Deputy Minister, Health Products and Food Branch, Health Canada

### **PRIME MINISTER'S OFFICE (PMO)**

- » **Jenni Byrne**, Director, Issues Management, PMO

### **PRIVY COUNCIL OFFICE**

- » **Daniel Jean**, Deputy Secretary to the Cabinet, Operations PCO
- » **Anne-Marie Smart**, Assistant Secretary to the Cabinet, Communications and Consultations. PCO

### **PUBLIC HEALTH AGENCY OF CANADA (PHAC)**

- » **Dr. David Butler-Jones**, Chief Public Health Officer, PHAC
- » **Dr. Frank Plummer**, Scientific Director General, National Microbiology Laboratory, PHAC
- » **Dr. Andrea Ellis**, Section Manager, Outbreak Response & Issues Management, PHAC
- » **Diane MacDonald**, Epidemiologist, Outbreak Management Division, PHAC
- » **Sarah Lawley**, Director Corporate Communications, PHAC
- » **Mark Raizenne**, Director General, Centre for Food-Borne Environment and Zoonotic Infectious Diseases, PHAC
- » **Robert Clarke**, Retired from position of ADM, Infectious Disease and Emergency Preparedness, PHAC

### **MAPLE LEAF FOODS INC.**


- » **Ivy Balancia**, Maple Leaf Foods
- » **Juan Alvarez**, Maple Leaf Foods
- » **Ron Judge**, Maple Leaf Foods
- » **Larry Mendes**, Maple Leaf Foods
- » **Dr. Randall Huffman**, Maple Leaf Foods
- » **Steve Dowbiggin**, Maple Leaf Foods

### **URBAN AND PROVINCIAL HEALTH SPECIALISTS**

- » **Dr. Dean Middleton**, Ontario Agency for Health Protection and Promotion
- » **Dr. Barbara Yaffe**, Toronto Public Health
- » **Dr. Horacio Arruda**, Québec Public Health
- » **Dr. David Williams**, Ontario Public Health
- » **David Cutler**

### **FAMILY MEMBERS OF DECEASED**





# Appendix E

## Glossary

### **AGRICULTURE SUB-COMMITTEE ON FOOD SAFETY**

The House of Commons has permanent ('Standing') all-party committees that examine relevant legislation, the activities and expenditures of a department or agency and the effectiveness of its policies and programs. Subcommittees are sometimes set up by the main committee to focus on specific issues.

On February 12, 2009 the Standing Committee on Agriculture and Agri-Food established a Sub-Committee on Food Safety to study the food safety system in Canada including the events and factors that lead the listeriosis outbreak of 2008. The Sub-Committee produced a report entitled *Beyond the Listeriosis Crisis: Strengthening the Food Safety System*, which was tabled in the House of Commons on June 18, 2009

### **AT-RISK POPULATION**

Individuals belonging to a specific group who share common characteristics, such as age, gender, that are more susceptible to illness or likely to develop a medical condition. Also referred to as 'vulnerable' groups.

### **AUDIT:**

An in-depth review of an establishment to ensure proper procedures are being followed. In the case of the food processing industry, CFIA carries out an audit to verify whether national health standards are being met. An audit requires inspectors to go through all areas of a plant and evaluate the entire establishment in one session. This differs from a daily inspection that covers all points an audit does, but cyclically over an extended period of time.

### **BEST BEFORE DATE:**

Labelling on food items that signifies the last recommended date the product should be consumed as shown on the label. Best before dates assist traceability by identifying when the product was manufactured.

### **BEST PRACTICES:**

There is no universally accepted definition but there is broad agreement that best practices share common characteristics. They are innovative, make a difference, have a lasting effect and have the potential to be replicated.

### **C-ENTERNET:**

A comprehensive, multi-partner surveillance system enteric (gastrointestinal) disease

### **CASE**

A person in the population or study group identified as having a particular disease.

### **CASE DEFINITION:**

The method used by public health professionals to define who is included as a case in an outbreak investigation, (e.g. a person considered directly affected by a disease). A case definition defines a case in terms of time, person and place.

### **COMPLIANCE VERIFICATION SYSTEM (CVS):**

The CVS provides a uniform approach to food safety inspection. Its purpose is to verify that federally regulated food-based establishments are complying with federal *Meat Inspection Regulations*. The system includes verification tasks and detailed procedures for CFIA inspectors to follow when conducting verifications. Inspections activities include daily and monthly tasks, and are based on known risks associated with food processing and the facility.

### **COMMUNICABLE DISEASE:**

An illness caused by a specific infectious agent or its toxic products that is spread from an infected person, animal or reservoir to a susceptible host, either directly or indirectly through an intermediary such as a plant or animal host, sector or the inanimate environment.



**CODEX:**

The short form for Codex Alimentarius Commission, a body established by the United Nations Food and Agriculture Organization in partnership with the World Health Organization. It was set up to protect the health of consumers and to ensure fair practices for international trade in food products. CODEX includes internationally recognized standards, codes of practice and guidelines for industry to follow to export their products.

**CROSS-CODING:**

A method of identifying human samples and corresponding food samples to make it easier to link their test results

**DEPUTY HEAD:**

The highest ranking public servant in a federal department or agency (usually referred to as a Deputy Minister) who manages the organization on a day-to-day basis and reports to the Minister. In some federal agencies, the position is also called President or Commissioner.

**EARLY ABERRATION REPORTING SYSTEM (EARS):**

An electronic surveillance system used in Ontario to monitor health trends based on disease information provided by local public health units. The system makes it easier to identify statistical increases in infectious and foodborne illnesses and to identify clusters of a disease.

**ENVIRONMENTAL SAMPLING:**

A testing method for example by swabbing used in the food processing industry to identify microorganisms on surfaces that could come into contact with food in order to control harmful bacteria that may be a threat to human health.

**EPIDEMIOLOGY:**

The study of the incidence and prevalence of illness in large populations to discover how often diseases occur in certain groups and why. The information is used to plan approaches to prevent diseases or to manage them in cases of outbreaks, such as infectious and foodborne disease epidemics.

**ESTABLISHMENT (EST.) 97-B:**

The Maple Leaf Foods plant at 150 Bartor Rd. Toronto, Ontario – referred to in this report as Bartor Road – where *Listeria* contamination in deli-meats resulted in the 2008 listeriosis outbreak.

**FOOD SAFETY:**

The overall safety and nutritional quality of food sold in Canada. Policies, standards and activities relating to food safety are the statutory responsibility of the Minister of Health.

**FOOD SUPPLY CHAIN / DISTRIBUTION SYSTEM:**

The path that foods take as they move from food producers to consumers.

**FOODBORNE ILLNESS:**

Foodborne illness occurs when a person consumes food contaminated with bacteria, viruses, parasites or toxins.

**FOODBORNE ILLNESS OUTBREAK RESPONSE PROTOCOL (FIORP):**

An intergovernmental agreement involving the federal, provincial and territorial governments that outlines the roles and responsibilities of all regulatory parties involved in a foodborne illness outbreak in Canada

**FORENSIC INVESTIGATOR:**

An individual with specialized training and expertise (e.g. legal, scientific, accounting, engineering) who reviews documentation to confirm facts or to identify factors that explain why or how an event unfolded, including the cause or causes of a problem

**HAZARD ANALYSIS AND CRITICAL CONTROL POINT (HACCP):**

An internationally recognized approach to food safety that became mandatory in Canada in 2005. HACCP is a core element of food processing plants' food safety program designed to assess and control hazards and risks associated with food production.

**HIGH RISK FOODS (FOR LISTERIA):**

Products most susceptible to *listeria* contamination, such as deli-meats, unpasteurized (raw) milk, soft cheeses, pâté, meat spreads, and smoked seafood and fish.

**INCUBATION PERIOD:**

The time between exposure to a bacterial or viral infection and the onset of symptoms or other signs of a disease. It can take between three to 70 days before people become ill with listeriosis.

**(FOOD SAFETY) INSPECTION:**

The activities carried out by a food inspector fulfilling daily or monthly tasks under the CFIA's Compliance Verification System.

**INTEGRATED PUBLIC INFORMATION SYSTEM (IPHIS):**

Ontario's automated client health record and reporting database used by public health officials. It supports public health interventions, tracking, follow-ups, case management and reporting, immunization tracking, communicable disease case management and population health surveillance components.

**LEAD AGENCY:**

In an outbreak the lead is the agency that has responsibility for the overall management of the emergency

**LISTERIA:**

The umbrella term to describe six strains of bacteria referred to as *Listeria* species (or *Listeria* spp.) Of these, only one strain, *Listeria monocytogenes* is known to cause illness in humans (listeriosis).

**LISTERIOSIS:**

A serious, potentially fatal, infection caused by eating food contaminated with the bacteria *Listeria Monocytogenes*. It occurs primarily in newborn infants, elderly patients, and patients who have compromised immune systems.

**LOT CODE:**

A number printed on a product or its packaging that signifies the day and year it was manufactured as well as the establishment where it was manufactured.

**MANDATORY RECALL:**

When a product is deemed to pose a threat to human health or safety, Section 19 of the Canadian Food Inspection Act give the Minister of Agriculture and Agri-food the authority to order that it be removed from the marketplace. Mandatory recalls are used when a company is unwilling or unable to recall its contaminated product or when the company cannot be found (e.g. bankruptcy) or identified.

**MANUAL OF PROCEDURES FOR THE MEAT INSPECTION PROGRAM:**

Contains information and instructions to inspectors about policies on the importation, exportation and interprovincial trade of meat products, as well as policies concerning the preparation of meat products in establishments licensed under the 1990 *Meat Inspection Act* and *Regulations*.

**MEMORANDUM OF UNDERSTANDING (MOU):**

A document describing a bi-lateral or multi-lateral agreement among parties that indicates an intended action. It is most commonly used in cases where there is not an existing legal obligation or in situations where one is not legally enforceable.

**MICROBE/MICROBIAL:**

A microorganism that causes a disease.

**MULTI-DEPARTMENTAL:**

Refers to the relationship among departments or agencies within government.

**MULTI-JURISDICTIONAL:**

Refers to the relationship among different levels of government (e.g. federal-provincial, federal-provincial-local)

**NOTIFIABLE DISEASE:**

A disease deemed of sufficient importance to public health to require that its occurrence be reported to public health officials. The reporting of notifiable diseases is mandated by the province and territories; notifiable diseases may vary from province to province. Reporting by the provinces and territories to the federal level is voluntary; however, agreement is reached by consensus of the Advisory Committee on Epidemiology, which comprises representatives from all provinces and territories. (PHAC)

**OUTBREAK:**

A sudden increase of disease greater than would otherwise be expected in a particular time and place.

**PANORAMA:**

Next generation information management solution to better manage public health outbreaks in a coordinated manner.

**PATHOGEN:**

The term used to describe bacteria, viruses or fungi that are the agents or producers of a disease.

**POST-PROCESSING TREATMENTS:**

Measures taken after products have been processed and packaged to kill contaminants before the products are distributed.

**PRECAUTIONARY APPROACH:**

The principle that there is a duty to take action to protect the public or the environment, even in the absence of scientific certainty, to avoid severe or irreversible harm.

**PRODUCT CODE:**

A series of numbers and/or letters that signify specific product information primarily for the use of the manufacturer to assist in tracing products and for quality assurance.

**PUBLIC SAFETY:**

Preventive or remedial action to protect the public from events that otherwise would pose significant danger, injury, harm or damage resulting from natural disasters or man-made crises

**PUBLIC HEALTH:**

The efforts of a society to keep its population healthy and safe by promoting good health, as well as preventing illness, injury and premature death.

**PUBLIC HEALTH SURVEILLANCE:**

The ongoing, systematic collection, analysis and interpretation of data essential to the planning, implementation and evaluation of public health practice, closely integrated with the timely dissemination of these data to those responsible for prevention and control (PHAC).

**PULSED-FIELD GEL ELECTROPHORESIS (PFGE):**

Scientific method used to identify genes at the DNA level commonly referred to as molecular sub-typing or “fingerprinting.”

**PULSENET:**

A national network of public health and food regulatory agency laboratories coordinated in Canada by PHAC’s National Microbiology Laboratory located in Winnipeg. PulseNet participants perform standardized DNA fingerprinting to distinguish foodborne disease-causing bacteria.

**READY-TO-EAT:**

Term used to describe food that requires no preparation before consumption.

**RECALL (FOOD SAFETY):**

A requested return of an entire production run of a product usually to preserve the health and well-being of the consumer and to limit liabilities.

**RISK COMMUNICATIONS:**

Term used to describe the communication approach and practices in situations where there is a high level of public concern or anxiety such as a health emergency

**STANDARD OPERATING PROCEDURE:**

A routine course of action; a normal practice.

**TRACEABILITY:**

The ability to trace and follow food, feed, food-producing animals or substances through all stages of production and distribution. Tags, tattoos, brands, best-before dates, billing and shipping invoices, and paper-based logbooks are examples of traceability tools used by industry and government.

**VOLUNTARY RECALL:**

A product recall initiated and carried out by a company that manufactured the product without being ordered to by government.

**WARNING (FOOD SAFETY):**


A public warning alerts consumers they may have purchased or otherwise obtained a product that presents a serious hazard to health and advises them not to consume it.

**WEIGHT OF EVIDENCE:**

Evidence has different weight in inducing belief or action with respect to facts or circumstances. Evidence that is indefinite, vague, or improbable will be given less weight than evidence that is direct and unrefuted.

**ZOONOTIC:**

The umbrella term describing diseases that can be passed to humans from animals.



# Appendix F

## Acronyms

## ACRONYMS

AAFC	Agriculture and Agri-Food Canada
CEO	Chief Executive Officer
CFEZID	Centre for Foodborne, Environmental, Zoonotic and Infectious Disease (PHAC)
CFIA	Canadian Food Inspection Agency
CIOSC	Canadian Integrated Outbreak Surveillance Centre
CMOH	Chief Medical Officer of Health
CPHO	Chief Public Health Officer
CVS	Compliance Verification System
FIORP	Foodborne Illness Outbreak Response Protocol
P/T	Provincial/Territorial
HACCP	Hazard Analysis Critical Control Point
HC	Health Canada
LRS	Listeriosis Reference Service (HC)
HRA	Health Risk Assessment
iPHIS	Integrated Public Health Information System
MLF	Maple Leaf Foods
MOHLTC	Ministry of Health and Long-Term Care (Ontario)
NML	National Microbiology Laboratory (PHAC)
OFSR	Office of Food Safety and Recalls (CFIA)
OMAFRA	Ontario Ministry of Agriculture and Food and Rural Affairs
PHAC	Public Health Agency of Canada
PFGE	Pulsed Field Gel Electrophoresis
PHU	Public Health Unit
RTE	Ready-to-eat
TPH	Toronto Public Health
US	United States