

## Canadian Food Inspection Agency



**Our vision:**  
To excel as a science-based regulator, trusted and respected by Canadians and the international community.

**Our mission:**  
Dedicated to safeguarding food, animals and plants, which enhances the health and well-being of Canada's people, environment and economy.

## Pathogen Reduction in Meat and Poultry

### Overview

**Anne-Marie St-Laurent**  
Director, Food Safety Division  
CFIA



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## Pathogen Reduction: a food safety priority

### Public health protection

- Acute and chronic food safety-related illnesses, including those caused by pathogens in food, have a significant impact on public health
- Significant economic costs including health care treatment and lost productivity

### Economic development

- Canada's trading partners are establishing more stringent food safety measures
- Improved measures in Canada expected to be prerequisite for market access

## Situation in Canada

### Major steps

- Industry has taken significant steps to strengthen food safety controls e.g. HACCP, On Farm Food Safety Programs (OFFSP)

### Surveillance

- Human illnesses in Canada linked to pathogens in meat and poultry
- PHAC has enhanced its surveillance and showed concerning levels of pathogen contamination in poultry at retail

## Situation in Canada

### Performance measures needed

- No current baseline data on the prevalence of priority foodborne pathogens for certain commodities
  - No baseline data for *E. coli* O157:H7 on beef carcasses at any processing steps
  - Outdated baseline data for *Salmonella* and *Campylobacter* in poultry
- Need nationally representative baseline information to set performance targets

### Challenges

- Surveillance systems need to be strengthened to better measure the public health outcome of pathogen reduction programs
- Need new strategies for the control of foodborne pathogens (e.g. farm-to-table approach)
  - Consumer education on cooking and handling of meat and poultry alone does not prevent foodborne illness

## Action: Pathogen Reduction Initiative

- In February 2009, FPT Ministers of Agriculture tasked Deputy Ministers to develop an action plan to reduce pathogens in meat and poultry
- A FPT Working Group has been established to develop the action plan consisting of representatives from CFIA, HC, PHAC, AAFC and provincial ministries of agriculture and health
- The objectives of the Pathogen Reduction Initiative are to:
  - Benchmark Canada's pathogen levels in meat and poultry
  - Establish pathogen reduction targets
  - Identify strategies to monitor and reduce pathogen levels

## Current Status

- Review pathogen reduction programs of key trading partners and identify best practices
- Identify initial pathogen reduction priorities
  1. *Salmonella* and *Campylobacter* in chicken
  2. *E. coli* O157:H7 and other verotoxigenic *E. coli* (VTEC) on beef carcasses, ground beef and trim
  3. *Listeria monocytogenes* in ready-to-eat meats
- Designed the first two priority baseline studies
- Initiation of stakeholder engagement – February 2011
- Implementation of the first baseline study in 2012-2013

## Microbiological Baseline Studies

- Studies designed to estimate current levels of pathogens and indicator organisms across a target population against which trends in microbial levels can be measured following implementation of interventions
- Baseline data are used to:
  - Demonstrate food safety performance to trading partners
  - Set performance standard (e.g. US) or pathogen reduction targets (e.g. EU, UK)
  - Evaluate the effectiveness of HACCP programs and intervention measures
  - Set guidelines for process control criteria (e.g. generic *E. coli*)

## CAN studies on post-chill chicken carcasses

- **Baseline data from federally-registered establishments are outdated**
  - No post-1997-98 study was conducted to evaluate the impact of FESP/HACCP
  - No baseline data on *Campylobacter* in poultry using US Food Safety and Inspection Service (FSIS) microbiological methods
- **Some provinces are moving forward in updating their baseline data**







Study	Time period	Salmonella		Campylobacter	
		Sample #	% +ve	Sample #	% +ve
<b>National</b>					
AAFC	1983-86	670	60.9	410	38.2
CFIA	1997-98	774	21.1	ND	ND
<b>Provincial</b>					
Ontario	2001-02	1,480	31.6	1,469	63.9
Quebec	2003-04	2,414	21.2	2,414	35.8
Alberta	2004-05	1,295	37.5	1,234	75.0
Ontario	2009-10	1,500	Ongoing	1,500	Ongoing

## US studies on post-chill chicken carcasses

- A decrease in percent positive rate for *Salmonella* was observed following the initial survey in 1994-95, but the rate remained unchanged after 2000
- Baseline data from the last survey was used to set tighter *Salmonella* and new *Campylobacter* performance standards for chicken carcasses
- Future US baseline surveys will be conducted at four-year interval or less

Study	Time period	Sampling location	Salmonella		Campylobacter	
			Sample #	% +ve	Sample #	% +ve
<b>Nationwide</b>						
FSIS	1994-95	Post-chill	1,297	20.0	1,144	88.2
FSIS	1999-00	Post-chill	1,225	8.7	ND	ND
FSIS	2007-08	Post-chill	3,275	8.2	2,926	40.2
		Re-hang	3,275	45.8	ND	ND

## Sampling locations for baseline studies on *Campylobacter* and *Salmonella* in broilers

	Performance targets by country		
	IS, SE	NZ, US	UK
<i>Campylobacter</i>	IS, SE	NZ, US	UK
<i>Salmonella</i>	DK, EU, IS, SE	EU, IS, SE, US	UK
Sampling locations	<b>Farm</b> 	<b>Processing</b> 	<b>Retail</b> 
	Flock prevalence 		Product prevalence 
Sample types	Sock samples, fecal droppings	Carcass rinse, neck skin, caeca	Whole and parts

## Proposed national microbiological baseline study in broiler chicken

### ➤ Main objectives

- To provide baseline data on prevalence and concentrations of *Salmonella* and *Campylobacter* in broiler chicken flocks, carcasses and retail chicken meat products

### ➤ Specific objectives

- Compare new baseline prevalence and concentrations of *Salmonella* in broiler chicken carcasses with 1997-98 baseline data
- Evaluate the geographical distribution and seasonal variation of *Salmonella* and *Campylobacter* in broiler chicken flocks grown on farms across Canada

### ➤ Target population and products

- Broiler farms (flocks sampled at abattoir)
- Post-chill carcasses
- Bulk packs containing a cluster of whole chicken carcasses (10-20)
- Raw chicken meat products (food retail outlets)

### ➤ Analytical methods

- In-line with methods used in the last US baseline study in broiler chicken
- Allow comparison of industry performance data with the baseline reference

## Data reporting and Communications

- A final report will be published after the completion of the study
- Industry will be asked to review the final report before public release
- Manuscripts will be submitted to peer-reviewed scientific journals
- A communication strategy will be developed by the CFIA in consultation with governments and stakeholders to effectively communicate the results of the baseline studies

## Next Steps

- Development of baseline sampling program for *Listeria* in ready-to-eat meats
- Finalization of the Discussion Paper on Interventions for *Salmonella* and *Campylobacter* in Poultry
- Development of stakeholder engagement strategy
- Implementation of remaining baseline sampling programs
- Development and implementation of Pathogen Reduction Programs

## Contact Information

Anne-Marie St-Laurent  
Director, Food Safety Division  
Canadian Food Inspection Agency  
[Anne-Marie.St-Laurent@inspection.gc.ca](mailto:Anne-Marie.St-Laurent@inspection.gc.ca)

Daniel Leclair  
Chief, Food Microbiology Surveys  
Canadian Food Inspection Agency  
[Daniel.Leclair@inspection.gc.ca](mailto:Daniel.Leclair@inspection.gc.ca)