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Health Canada Food Safety Assessment Program

Development of a Logic Model and an Evaluation Framework of the Canadian Food Inspection Agency's Modernized Poultry Inspection Program



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Également offert en français sous le titre : *Élaboration d'un modèle logique et d'un cadre d'évaluation du Programme modernisé d'inspection de la volaille de l'Agence canadienne d'inspection des aliments*

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Executive Summary

The Canadian Food Inspection Agency's Modernized Poultry Inspection Program (MPIP) is an initiative to address the hazards associated with raw poultry leaving federally registered processing plants. The goals of MPIP are to control microbial pathogens, such as *Salmonella*, in raw poultry products and to enhance the use of science and risk-based management in Canada's poultry inspection system. The Canadian Food Inspection Agency's Modernized Poultry Inspection Program was chosen for assessment by a committee comprised of senior Health Canada and Canadian Food Inspection Agency representatives because of the potential risks to human health posed by these hazards.

Raw poultry products may contain microbiological, chemical, or physical hazards, which if not controlled, may result in health risks for the consumer. Hazards of microbiological origin are of greatest concern in poultry products because poultry is known to be a reservoir of food borne pathogens, particularly serotypes of *Salmonella* and *Campylobacter*. In the production of food there is a chain or continuum from the farm level, through processing, to final preparation and cooking. Poultry slaughter establishments are one link in this chain and the mitigation measures MPIP provides can influence the prevalence and/or concentration of organisms on poultry and poultry products. All federal poultry inspection programs require producer farms to submit flock information sheets that provide the processor with information regarding potential chemical and biological hazards associated with live poultry.

MPIP is a voluntary program being implemented currently in 10 federally registered poultry slaughter establishments out of 64 across Canada. The other federally registered plants are either using traditional modes of inspection (with government inspectors performing a sensory-based carcass-by-carcass inspection) or the Canadian Poultry Inspection Program (CPIP) which is a shared inspection program where industry operators perform carcass defect detection at pre-evisceration stage of the process and examine the cavity of each and every poultry carcass for defects while the CFIA inspectors inspect the carcass exterior and corresponding viscera for defects.

Health Canada and the Agency jointly decided that a logic model and an evaluation framework be developed before initiating a full assessment. The logic model is a diagram that captures information about the main elements of the program and describes in concise terms how the program operates, as well as the outcomes or results that the program is intended to produce. The evaluation framework outlines key evaluation questions, examines the type of data that needs to be collected to answer those questions including its availability and provides an evaluation strategy or options for an assessment.

Under MPIP, the industry operator is responsible for the examination of all poultry carcass exterior, cavities and viscera and for removing any defective carcasses from the evisceration line for subsequent inspection and eventual disposition by a CFIA veterinarian. The roles and responsibilities of CFIA inspectors have moved away from hands-on inspection to an inspection regime that involves continuous monitoring of the operator's defect detection performance which is a component of the establishment's Hazard Analysis Critical Control Point (HACCP) Plan.

This allows resources that were previously allocated to on-line inspection to be re-directed to higher risk areas, based on need.

A MPIP logic model was developed in collaboration with the CFIA. The logic model, as well as interviews held with stakeholder groups, were assets in developing key evaluation questions and potential indicators for evaluating the effectiveness of MPIP. These questions and indicators are organized in a matrix using broad evaluation issues of Rationale, Design, Program Delivery and Impact/Success. The evaluation questions include ones that may interest CFIA Program administrators along with more science-based questions to address the health and safety elements of the program. The summary of the stakeholder interviews and the document on international practices are attached as appendices.

The data necessary to conduct a comprehensive formative evaluation were identified, provided to and discussed with the CFIA. In this process, the CFIA has received feedback on the positive aspects of MPIP and information on current limitations in measuring the program's effectiveness.

CFIA Management Response

Background

Section 11(4) of the *Canadian Food Inspection Agency Act* provides the Minister of Health with the responsibility for assessing the effectiveness of CFIA's food safety activities. Health Canada's (HC) Bureau of Food Safety Assessment conducts these assessments with the objectives of providing advice and guidance to CFIA on its food safety activities; and providing feedback to Health Canada to assist in carrying out its roles of developing food safety and nutrition policies and standards.

In December 2001, the Bureau selected the Canadian Food Inspection Agency's Modernized Poultry Inspection Program (MPIP) for evaluation. At that time, MPIP was a voluntary program, implemented as a pilot in eight of the 64 poultry plants across Canada. The desired result of the evaluation was to determine the effectiveness of MPIP, and to assist in establishing direction for the MPIP program prior to its mandatory implementation. As the assessment planning proceeded, the Assessment Committee determined that there was not enough information available to complete a full assessment. In September 2003 a decision was made to prepare an Evaluation Framework document, in anticipation of a full evaluation at a later stage in the Program's development.

Evaluation Challenges

In the Evaluation Framework, Health Canada identified five evaluation challenges that may warrant a delay of the assessment. First, the CFIA's current baseline survey data (Canadian Microbiological Baseline Survey of Chicken Broiler and Young Turkey Carcasses, June 1997-May 1998) would not be useful tool to determine how well MPIP plants were performing when compared to other modes of inspection. The CFIA agrees that it would be desirable to conduct a new national baseline survey to update the current baseline data regarding microbiological contamination levels (e.g. *Salmonella* and *E. coli*) in poultry. Pathogen level data from MPIP establishments could then be compared to the new baseline information and to alternate methods of poultry inspection to demonstrate the effectiveness of MPIP. CFIA is exploring options to fund a new baseline study.

The CFIA has also considered conducting another baseline survey in the "traditional" slaughter establishments to update acceptable quality level (AQL) standards. AQL standards refer to non food safety related defects in poultry such as bruises, fractures, localized areas of skin disease. Post-mortem inspection to detect defects is carried out by CFIA inspectors in non-MPIP establishment, and by industry defect detectors in MPIP-establishments. The results of defect detection from the two types of establishments could then be compared to evaluate the detection performance of industry compared to CFIA.

The second evaluation challenge identified by HC was "the manner in which salmonella samples

are collected”. While this is primarily a technical issue, the CFIA agrees with Health Canada’s suggestion regarding the extension of sample collection period over the entire year to account for possible seasonal variations. The Agency will re-evaluate its sampling methods as it proceeds with the development of the Canadian Pathogen Reduction Program.

The third evaluation challenge identified by HC was the limited available surveillance information that could link raw poultry to food borne illnesses. The CFIA agrees that this presents a challenge with respect to measuring the outcomes of the Agency’s food safety activities. The Agency supports Health Canada’s ongoing efforts to collect surveillance information related to food borne illness.

The fourth evaluation challenge indicated that the small number of establishments currently participating in the MPIP program prevents the comparison of the establishments’ performance results. Currently, 14 plants are participating in the Program of which 6 have fully implemented MPIP. The number of establishments participating in MPIP is increasing. We expect that this increase will facilitate the CFIA’s ability to compare the performance of MPIP plants that differ, for example, in the type of species slaughtered (turkey versus chicken), in the volume of production (high versus low), or in the number of shifts employed (single versus double shifts).

The fifth evaluation challenge identified was the limited use of flock information sheets in the development of “farm to table” linkages. The CFIA plans to partner in various research projects to transform the flock sheet information into electronic data, and to analyze the data to provide information. For example, information may be generated on the effects of various feed withdrawal regimes on levels of carcass contamination.

Next Steps

The CFIA consults, on an ongoing basis, with partners and stakeholders in the development of science-based inspection methodologies. The Agency supports the assessment of the Modernized Poultry Inspection Program by Health Canada as a means to further validate the scientific basis for the program and to help establish its future direction.

While a full food safety assessment of the Program was not completed, the development of an evaluation framework for the Modernized Poultry Inspection Program has had a number of useful outcomes. A logic model, linking program activities to food safety outcomes was developed and validated by CFIA program officials. Key evaluation challenges were identified and potential evaluation questions were proposed. Finally, the evaluation framework identifies options for a future assessment of the Modernized Poultry Inspection Program.

The activities described above will assist the CFIA in development of performance measures to assess the effectiveness of the Program and to further promote the poultry industry’s adoption of science-based, risk management practices.

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Development of a Logic Model and an Evaluation Framework of the Canadian Food Inspection Agency's Modernized Poultry Inspection Program

1.0 Background and Approach to the Evaluation Framework on the Modernized Poultry Inspection Program (MPIP)

1. As stated in section 11(4) of the *Canadian Food Inspection Agency Act*, Health Canada has a responsibility to assess the effectiveness of CFIA's activities with respect to food safety and nutritional quality. The Advisory Committee, comprised of senior CFIA and Health Canada representatives, selected the Modernized Poultry Inspection Program for assessment. Since MPIP is a pilot project with 10 of 64 poultry plant participating, the Committee recommended that the extent to which a full assessment could be conducted at this time be examined. The Food Safety Assessment Program developed Terms of Reference defining the work to be completed in order to develop an Evaluation Framework.
2. Health Canada auditors visited several MPIP plants to gain an understanding of how MPIP operates. Interviews were conducted with MPIP program and operations staff, Health Canada scientists, National Poultry Industry Associations and industry management. BFSAs developed a MPIP logic model in collaboration with the CFIA. The MPIP logic model outlines activities and outputs of the program as well as the outcomes or results that the program is intended to produce. Subsequently the MPIP Logic Model was used by BFSAs to formulate evaluation questions about MPIP's rationale/relevance, design, program delivery and its impacts or outcomes. The Evaluation Framework includes a matrix table that outlines specific indicators, data and data sources, and the methodology that may be used to answer key evaluation questions. Additionally, the Evaluation Framework outlines some evaluation challenges that will need to be examined and provides an evaluation strategy or options for the future assessment of MPIP.

2.0 Program Profile for the Modernized Poultry Inspection Program

Federal Poultry Inspection Programs

3. There are three types of poultry inspection methodologies used in federally registered poultry slaughtering establishments. Traditional government carcass-by-carcass inspection remains mandatory in federally registered poultry slaughter establishments, however establishments have the option of implementing Canadian Poultry Inspection Program (CPIP) or MPIP and their respective requirements as an alternative. Hence CPIP and MPIP are voluntary programs.
4. **Traditional inspection:** an establishment must have traditional inspection where Canadian Food Inspection Agency (CFIA) inspectors perform a sensory based carcass-by-carcass inspection.
5. **Canadian Poultry Inspection Program (CPIP):** This is a shared inspection program where industry operators examine the cavity of each and every poultry carcass for defects while CFIA inspectors inspect the carcass exterior and corresponding viscera for defects. CFIA inspectors continuously monitor and measure the operator's performance.
6. **Modernized Poultry Inspection Program (MPIP):** In this program the industry operator is responsible for the examination of all poultry carcass exteriors, cavities and viscera. When necessary, defective carcasses may be removed from the production line for subsequent inspection and eventual disposition by a CFIA veterinarian. CFIA inspectors are responsible for continuously monitoring the operator's defect detection performance which is a component of the establishment's Hazard Analysis Critical Control Point (HACCP) Plan.

Modernized Poultry Inspection Program Objectives

7. MPIP objectives (as listed in Chapter 19 of the Meat Hygiene Manual of Procedures) are:
 - control of hazards associated with the contamination of live poultry with food borne pathogens as received at registered establishments, and the subsequent spread of these pathogenic bacteria during the slaughter and processing;
 - promote the proactive control (prevent, eliminate or reduce) of hazards through the implementation of a CFIA-recognized system in poultry slaughtering establishments;
 - facilitate the change from prescriptive regulatory requirements to strictly enforced

- objective performance standards in poultry inspection;
- facilitate the transition of CFIA staff from hands-on inspection to audit-based verification activities for poultry slaughter establishments operating under a HACCP system;
- facilitate the assumption by industry of the detection and handling of all carcasses with defects (previously performed by CFIA inspectors) under continuous government oversight; and
- respond to changing international trade requirements, eg., Pathogen Reduction and HACCP Program Rule in the US.

(The order of the MPIP objectives above are not listed in order of priority.)

Modernized Poultry Inspection Program Description

8. The CFIA states the goals of MPIP are to reduce microbial pathogens in raw poultry products and to enhance the use of science and risk- based management in Canada's poultry inspection system. The four pillars of MPIP are:
- a HACCP system to ensure a controlled process to eliminate or reduce biological, chemical and physical hazards;
 - Mandatory submission of flock information sheets;
 - Postmortem inspection by trained and accredited industry defect-detector personnel rather than by government inspectors; and
 - Microbiological testing for generic *E. coli* and *Salmonella* to assess establishment sanitation and hygiene and pathogen reduction.

A detailed description of the Modernized Poultry Inspection Program is attached in Appendix 1

2.1 Narrative for Modernized Poultry Inspection Logic Model

9. The logic model is a diagram that captures information about the main elements of the program being examined and describes in concise terms, how the program works. Through the depiction of the program's activities, outputs, immediate, intermediate and ultimate outcomes, the model enhances our understanding of what this program is meant to

achieve. In this case, the program being examined is CFIA's Modernized Poultry Inspection Program (MPIP). For the purpose of this document, the term output is defined as direct products or services stemming from the activities of the Modernized Poultry Inspection Program and the term outcome is defined as an external consequence attributed to the Modernized Poultry Inspection Program that is considered significant in relation to its objectives.

10. The MPIP program logic model outlines activities and outputs of the program as well as the outcomes or results that the program is intended to produce. This information was obtained through interviews with CFIA staff at Headquarters and Area level as well as from Chapter 19 of the Meat Hygiene Manual of Procedures for MPIP.
11. The Modernized Poultry Inspection Program is depicted as having three basic components which are *Program Design and Management*, *Program Delivery and Stakeholder Engagement*. Under each of these is a list of the activities that provides more detail on the nature of the MPIP.

Program Design and Management

12. CFIA Headquarters has primary responsibility for the *MPIP Program Design and Management* along with specialists in the Program Networks. The activities listed under *Program Design and Management* indicate that MPIP is continually reviewed and revised, as required, as a result of inspection/monitoring and tracking activities. This results in continuous improvement and updating to MPIP policy, amendments to the Regulations governing MPIP and training requirements.

Program Delivery

13. In MPIP, the *Program Delivery* is performed by CFIA staff in the designated MPIP plants and Area offices across Canada. *Program Delivery* is comprised of three elements which are: verification, inspection and monitoring and training activities. Verification activities include verifying industry's Hazard Analysis Critical Control Point (HACCP)/MPIP compliance through partial and full HACCP audits. Inspection and monitoring activities include all those activities (other than audits) conducted by the CFIA staff such as reviewing the industry's microbiological sampling results, performing monthly inspections, completing antemortem and postmortem inspection reports, collecting samples for laboratory analysis, measuring the plant employees' performance at carcass, cavity and viscera defect detection through International Organization for Standardization (ISO) based sampling, and correlation tests.
14. In addition, CFIA assesses the readiness of the plants to move from one phase to the next, evaluating the training of plant employees, the microbiological testing program (for *E. coli*

and *Salmonella*) and the corrective actions implemented by plants to rectify identified problems.

15. The delivery of training to plant employees is a major activity under the *Program Delivery* component as it ensures that the plant is ready and able to perform the on-line examinations required by MPIP. CFIA trains designated plant employees to deliver the MPIP training program to their employees. Subsequently, trained employees must be accredited prior to performing MPIP inspections.

Stakeholder Engagement

16. The third sub-activity which is *stakeholder engagement*, is an essential element of the MPIP. During the design of MPIP there was discussion of the potential benefits of participation in this program with numerous interested stakeholders. These stakeholders included industry management, consumer associations, producers (growers), processors, national poultry associations, scientists (including veterinary groups), employee unions, other government departments as well as international trading partners (e.g. United States). CFIA provides technical advice as required to stakeholders such as the Chicken Farmers of Canada on the development of flock information sheets.
17. The consultation is continuing as the program evolves. There is on-going participation in International Codex Alimentarius Commission discussions related to meat hygiene and meat slaughter operations. An element that is currently being pursued by the CFIA is the letter of equivalency from the United States that would ensure that poultry produced in Canada can be sent to the U.S. without the need for additional inspection resources (designated for export to the U.S.) to be located in the plants.
18. In order to determine the overall impact of MPIP, it is essential to examine the immediate (short-term), intermediate (longer term) and ultimate (future) outcomes of the program. These outcomes are derived from key MPIP activities and outputs (as outlined in the logic model) and through interviews with stakeholders and CFIA Area level staff.

Immediate Outcomes

19. The immediate outcomes that CFIA have identified are:
 - stakeholders understand and/or agree with and are committed to MPIP requirements;
 - increased capacity on the part of industry to control the safety and quality of their products;
 - there is a shift of hands-on defect detection responsibilities from CFIA to the industry;

- MPIP establishments and the poultry products manufactured comply with the MPIP requirements and trading partner requirements;
- enhanced use of science and risk-based management in Canada's poultry inspection system. The core of this science and risk-based system is HACCP and the identification of the appropriate critical control points to ensure that processing and inspection are conducted to enhance the microbiological safety of the product; and
- risk-based allocation of CFIA poultry inspection resources. Resources that were previously allocated to on-line inspection are re-directed to higher risk areas, based on need.

Intermediate Outcomes

20. The intermediate outcomes that CFIA have identified are:

- a stronger farm to table food safety continuum for poultry;
- poultry products from MPIP establishments are safe and suitable for consumption; and
- international recognition of the safety and suitability of Canadian poultry products.

21. These intermediate outcomes have been derived from a review of the goals and objectives of the program.

Ultimate Outcome

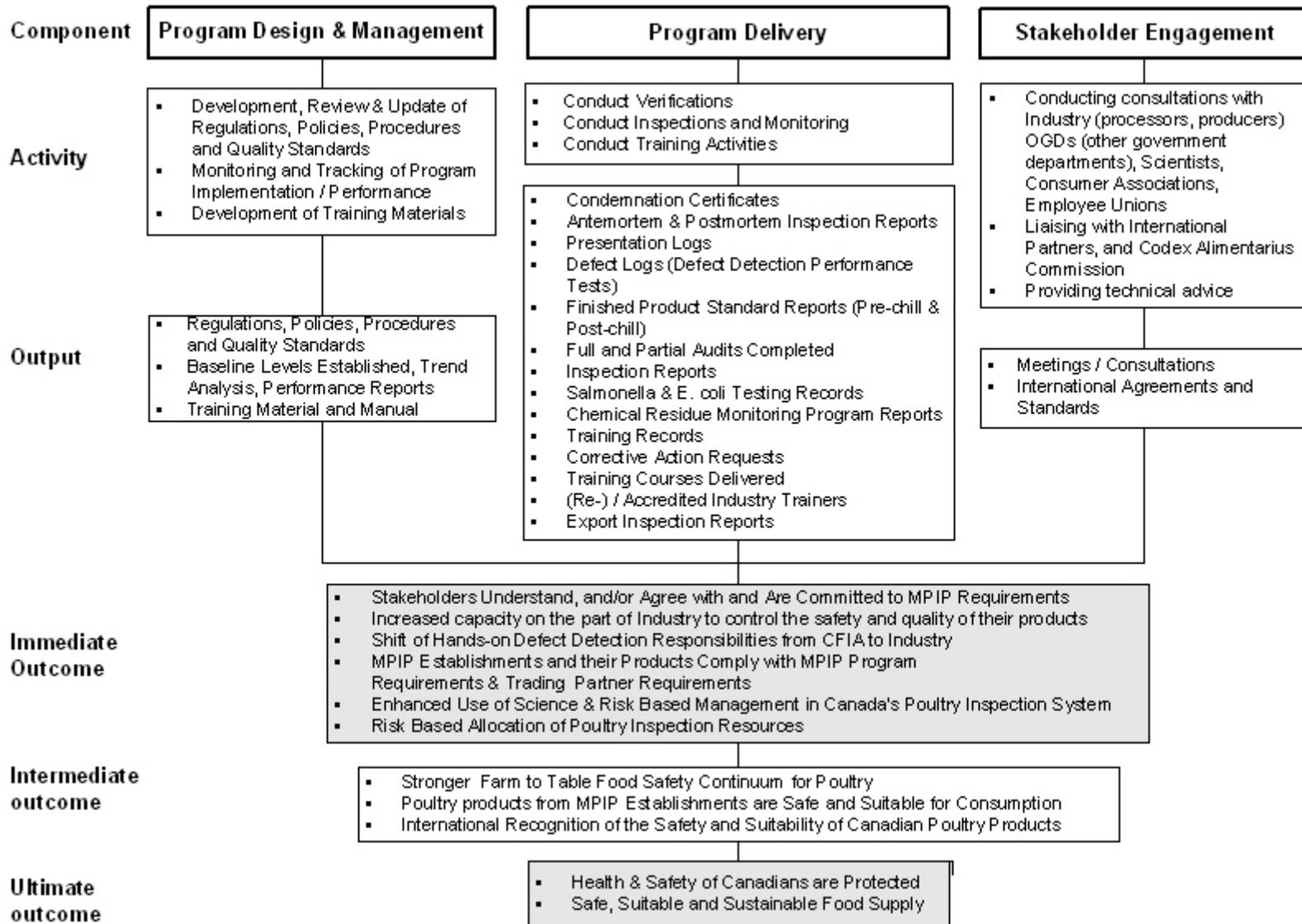
22. The CFIA indicates that the ultimate outcome of MPIP is:

- the health and safety of Canadians is protected, and
- there is a safe¹, suitable and sustainable food supply.

¹ The Codex Committee on Meat Hygiene (CCMH), at its eighth session in February 2002, produced a draft Code of Hygienic Practice for Fresh Meat* In the current version of this document, meat that is safe for consumption is defined as meat that:

- ▶ has been produced by applying all food safety requirements appropriate to its intended end use; and
- ▶ meets food safety objectives or other outcome-based performance parameters for specified hazards.

2.2 The Program Logic Model



3.0 Narrative on Evaluation Matrix Table

23. A matrix table has been developed outlining each of the evaluation questions, along with specific indicators, data required, data sources and methodology that can be used to address the issues. Similar to the logic model, the matrix is an important and useful tool within an evaluation framework.

24. The matrix is organized within broad evaluation issues of Rationale, Design, Program Delivery and Impact/Success. Questions have been raised within all four of these broad categories that are relevant to the MPIP program, for example:

Rationale/Relevance: To what extent are the approach and objectives of MPIP relevant? What evidence is there that food borne illness can be reduced through the implementation of programs such as MPIP and that human health outcomes could be improved?

Design: To what extent has the MPIP design incorporated the appropriate activities to address the program objectives?

Program Delivery: To what extent is MPIP implementation consistent with the program design and program objectives?

Impacts/Success: To what extent and how is MPIP producing the results outlined in each of the program objectives as well as longer term results that deal with impacts of food safety outcomes and human health?

25. Each question provides information on the following:

Indicator: A quantitative or qualitative factor or variable that provides a simple and reliable means to measure achievement or reflect the changes connected to an intervention or to help assess the performance of a development factor. Indicators help to address the pieces of information or data that will aid the assessment.

Data source: The source of the information used to address the evaluation question. There could be several sources of data such as existing information, secondary data or special data collection exercises.

Methodology: The method in which the information could be collected and analysed to answer the question.

26. The matrix provides a full range of methodologies that could be undertaken as part of an evaluation, based on the resources available. The matrix includes standard evaluation questions that the CFIA Program administrators may be interested in along with the more science-based questions to address the health and safety elements of the program.

3.1 Evaluation Methodologies

27. In this section the methodologies that have been proposed in the matrix to address the questions or issues , will be explained in more depth.

Document Review

28. This includes general documents that would be useful to explore the evaluation questions posed. Such documents would include documents from stakeholders.

Program Document Review

29. This includes an examination of relevant MPIP Program documents that contain pertinent program information. This type of review is important as these written documents trace the progress of the program and can corroborate information on the perceptions and knowledge of program staff.

Literature Review

30. This includes published and unpublished academic and scientific papers that must be assembled for weighing of evidence about a particular question. The literature review would be essential to complete an evaluation of the MPIP because it addresses fundamental issues related to the program's impacts on human health as well as issues related to the design and delivery of the program.

Expert Panel

31. This would include a panel of scientific experts (from both Health Canada and CFIA), including academics who are renowned in a particular discipline or study, who would meet to review and form an expert opinion about specific aspects of the program. This expertise is a perspective that cannot be obtained from any other source and can be used when data for quantitative risk assessment is limited.

Development of a Risk Model

32. At times, it is extremely difficult to find the appropriate data to answer the question, either due to its limited nature or its non-existence. In such cases, inferences could be made through the development of a risk model that would assist in answering the questions in a theoretical manner. Modelling gives us a tool that can help us understand a complex

system, provides research direction and help identify and test risk mitigation strategies. Inferences can be made about the subject in question and extrapolated to a potential real-life situation. Experts within the Microbial food safety risk assessment unit of the Laboratory Center for Food borne Zoonosis of Health Canada would be involved in developing such models.

Key informant interviews

- 33.** A key informant interview can be defined as a one-on-one consultation with a person who has a professional position related to the program giving him or her a perspective on the nature and scope of the program, the program participants, and the program staff.

Stakeholders

- 34.** Agencies, organizations, groups or individuals who have a direct or indirect interest in the program or its evaluation. Among them are the national poultry industry associations, provincial governments, and could include carriers, catchers, producers, feed mill representatives, independent veterinarians and consumer associations.

Focus Group

- 35.** A focus group is an interview with a small number of people selected for their knowledge or perspective on a topic of interest, that is convened to discuss the topic with the assistance of a moderator.

3.2 Evaluation Matrix Table

Program Rationale / Relevance

#R	Evaluation Question	Indicators	Data Source	Methodology
R1	To what extent are objectives and approach of MPIP relevant to enhancing food safety?	<ul style="list-style-type: none"> CFIA staff opinions Scientific opinions Stakeholders' opinions Number of other countries using a similar approach 	<ul style="list-style-type: none"> CFIA, HC, Academia and Industry Risk Assessment* Scientific literature Meat Hygiene Manual of Procedures Chapter 19 Information about inspection strategies used by other countries 	<ul style="list-style-type: none"> Key informant interviews Expert panel Conduct of survey of stakeholders Review Documents Review Literature
R2	What evidence is there that foodborne illness can be reduced through the implementation of programs such as MPIP and that human health outcomes could be improved?	<ul style="list-style-type: none"> Salmonella Contamination Rates in finished product Scientific opinions Observed or modelled decrease in foodborne illnesses 	<ul style="list-style-type: none"> MPIP Salmonella data Scientists Scientific literature Surveillance data** Outbreak data ** Case studies ** 	<ul style="list-style-type: none"> Review Salmonella sampling results Expert panel or focussed interview with key informants Develop models and review existing models Review scientific literature, surveillance data, outbreak data, case studies

**Classification of Grossly Detectable Abnormalities and Conditions Seen at Postmortem in Canadian Poultry Abattoirs according to a Hazard Identification Decision Tree* by Jean-Robert Bisailon, et al in the Journal of Food Protection, 2001, Volume 64, number 12, pages 1973-1980. ** may be influenced by limited amount of data

Program Design

#D	Evaluation Question	Indicators	Data Source	Methodology
D1	<p>To what extent has the MPIP design incorporated appropriate activities to address the following :</p> <ul style="list-style-type: none"> -Control of hazards, -Implementation of HACCP, <p>- Science-based, statistical process controls</p> <p>-Enforcement of objective performance standards,</p> <p>-Transition to audit based verification and,</p> <p>-industry assumption of defect detection?</p>	<ul style="list-style-type: none"> • Scientific Opinion • Evidence that policy design addresses identified hazards/risks • Generic HACCP plan identifies appropriate hazards and CCPs • Letters of recognition of Food Safety Enhancement Program (FSEP). • Evidence of audit protocol • Evidence of appropriate procedures and guidance to control hazards other than HACCP (eg. Flock Information Sheets) • Information on hazards including risk assessment* • Baseline survey • Sampling schemes and their frequency • Pathogen reduction efforts • Finished Product Standards (FPS), Interim Action Levels, Acceptable quality limits • Evidence of enforcement policies • Evidence of continuous government oversight of the industry • Evidence of industry defect detection testing procedures • Evidence of training program for industry 	<ul style="list-style-type: none"> • Scientists • Meat Hygiene Manual of Procedures , Chapter 19 • Generic HACCP Plans • Meat Hygiene Manual of Procedures , Chapter 19 • FSEP documents • Risk Assessment document * • Flock Information Sheets • Scientists • Risk Assessment document * • Scientific literature • Baseline Survey of Chicken Broiler and Young Turkey Carcasses' • Meat Hygiene Manual of Procedures Chpt. 19 • Baseline Survey • Meat Hygiene Manual of Procedures Chpt. 19 • MPIP training material • Meat Hygiene Manual of Procedures Chpt. 19 	<ul style="list-style-type: none"> • Expert Panel Review • Compare MPIP design & policy with identified risks • Review generic HACCP plans • Review available industry verification data • Review CFIA program documentation and Meat Hygiene Manual of Procedures Chpt. 19 • Review flock information sheets • Expert Panel Review • Review documents and literature • Review manual • Review documents • Review manual • Review training material • Review manual

#D	Evaluation Question	Indicators	Data Source	Methodology
D2	To what extent are the program outputs/data used towards improving the program?	<ul style="list-style-type: none"> • Revised regulations, policies, procedures and standards • Evidence of Procedure for Program Performance reviews • Evidence of Program revisions and improvement • Evidence of system in place to address emerging issues 	<ul style="list-style-type: none"> • CFIA Personnel and stakeholders • Poultry network meeting notes • HQ’s Program Monitoring Reports (quarterly reports) • Program performance reports • Environmental scan including emerging issues data, • MPIP amendments/ policy updates • Training Material updates 	<ul style="list-style-type: none"> • Interview key informants and stakeholders • Review program documentation, program monitoring and improvement information • Review and analyse changes to the Program • Review scientific literature and information from annual veterinarian meetings

Program Delivery

#Del	Evaluation Question	Indicators	Data Source	Methodology
Del 1	To what extent is MPIP implementation consistent with the program design and program objectives?	<ul style="list-style-type: none"> • Evidence of verification activities • Evidence of inspection/monitoring activities (Evidence of plants meeting MPIP design and program objectives) • Evidence of training activities 	<ul style="list-style-type: none"> • Reports of verification activities • Reports of inspection/monitoring activities • Reports of training activities • Corrective Action Requests (CAR's) • Establishment / CFIA staff 	<ul style="list-style-type: none"> • Review of reports and corrective action requests • Interview with Establishment / CFIA staff
Del 2	What are the facilitators and impediments to implementing the program as designed and how are these addressed by CFIA?	<ul style="list-style-type: none"> • Key informant perspectives • Time to implement each phase 	<ul style="list-style-type: none"> • CFIA staff, industry personnel, National Poultry Industry Association representatives • CFIA program files • Literature of other countries' experience 	<ul style="list-style-type: none"> • Focus group (Industry and CFIA) • Review program files • Review literature
Del 3	How does CFIA use their food safety related audit findings (Corrective Actions Requests) to promote the effective delivery of the MPIP program?	<ul style="list-style-type: none"> • Evidence of follow-up of food safety related Corrective Action Requests issued 	<ul style="list-style-type: none"> • Corrective action requests(CAR's) and related documents including follow-up documentation • Meat Hygiene Manual of Procedures Chpt. 19 • CAR procedures 	<ul style="list-style-type: none"> • Review of Corrective action requests documentation • Review Meat Hygiene Manual of Procedures for information on CAR's

Program Impacts/Success

#I	Evaluation Question	Indicators	Data Source	Methodology
II a)	To what extent and how is MPIP controlling hazards associated with the contamination of live poultry with Food borne pathogens as received at registered establishments, and the subsequent spread of these pathogenic bacteria during the slaughter and processing of poultry?	<ul style="list-style-type: none"> • Inference of the effects of the MPIP on the reduction of pathogen in the end product • Inference of incidence of pathogens in live poultry • Evidence of use of flock information sheets in controlling hazards associated with live poultry • Inference of incidence of pathogens in end-products • Evidence of transport condition controls 	<ul style="list-style-type: none"> • Scientific literature • Other regulatory bodies • Scientific experts (inference model) • Results from end product sampling from plants (inference model) • Follow-up actions to identified flock information sheet concerns** 	<ul style="list-style-type: none"> • Review of scientific literature • Develop an inference model • Review end-product sampling data • Review follow-up actions in response to the flock information sheets
II b)	To what extent and how does MPIP promote the proactive control (prevent, eliminate or reduce) of hazards through the implementation of a CFIA-recognized HACCP system in poultry slaughtering establishments?	<ul style="list-style-type: none"> • Evidence of proactive control at Critical Control Points (CCP's) • Evidence of deviation plans and actions • Evidence of HACCP audits 	<ul style="list-style-type: none"> • Verification data of effectiveness of CCPs • Records of deviation plans and actions • HACCP Audit Reports 	<ul style="list-style-type: none"> • Review of FSEP (HACCP) recognition records • Review of deviation plans and actions Review of CFIA's HACCP audit records

#I	Evaluation Question	Indicators	Data Source	Methodology
II c)	To what extent and how does MPIP facilitate the change from prescriptive regulatory requirements (the Meat Inspection Regulations' specified inspection procedures) to strictly enforced objective performance standards (MPIP standards) in poultry inspection?	<ul style="list-style-type: none"> • Evidence of objective performance standard tests established by CFIA • Number of activities with and those without performance standards • Evidence of MPIP certification of CFIA's inspectors 	<ul style="list-style-type: none"> • Meat Hygiene Manual of Procedures Chpt. 19 • Reports of monitoring against standards • Corrective Action Requests • CFIA staff • CFIA inspector training manuals and records 	<ul style="list-style-type: none"> • Review manuals • Review Reports and CAR's • Interview CFIA staff • Review training manuals and records
II d)	To what extent and how does MPIP facilitate the transition of CFIA staff from hands-on inspection to audit-based verification activities for poultry slaughter establishments operating under a HACCP system?	<ul style="list-style-type: none"> • Documents that clearly define roles and Responsibilities • Number of audit-based verification activities • Number of CFIA inspectors with FSEP certification • Number of CFIA inspectors per establishment 	<ul style="list-style-type: none"> • Traditional and CPIP manuals and records • Audit-based verification reports • Resource management system (RMS) • MPIP Readiness Report • FSEP training manuals and certification records • Meat Hygiene Manual of Procedures Cpt.19 • MPIP training manuals and certification records 	<ul style="list-style-type: none"> • Review and compare Traditional, CPIP and MPIP activities • Review audit-based verification reports • Review of Resource Management System • Review MPIP Readiness Report • Review Training records & accreditation records • Review Meat Hygiene Manual of Procedures , Chpt. 19 • Review of FSEP certification records

#I	Evaluation Question	Indicators	Data Source	Methodology
I1 e)	To what extent and how does MPIP facilitate the assumption by industry of the detection and handling of all carcasses with defects (previously performed by CFIA inspectors) under continuous government oversight?	<ul style="list-style-type: none"> • Number of industry trainers trained and accredited • Compliance with Acceptable Quality Limits and Finished Product Standards 	<ul style="list-style-type: none"> • Train the trainer records • Defect detection performance test records • FPS testing records 	<ul style="list-style-type: none"> • Review of records
I1 f)	To what extent and how does MPIP respond to changing international trade requirements, eg., Pathogen Reduction and HACCP Program Rule in the U.S?	<ul style="list-style-type: none"> • Evidence of establishment of microbiological testing program for Salmonella and E. Coli • Evidence of establishment of Interim Acceptable Limits for Salmonella and • E. coli and compliance to them 	<ul style="list-style-type: none"> • Basic Compliance Checklist 	<ul style="list-style-type: none"> • Review records
I2 ...I2	To what extent has MPIP been effective in improving food safety outcomes ?	<ul style="list-style-type: none"> • Evidence of reduction in risks of illness • Number of salmonellosis and campylobacteriosis cases Vs • level of Salmonella in MPIP poultry products • Expert/scientific opinion on effectiveness of MPIP • Pathogen loads in poultry products obtained from MPIP, CPIP and traditional establishments (E. coli, Salmonella) 	<ul style="list-style-type: none"> • Scientists • Scientific journals • Population and Public Health Branch Surveillance data on Salmonellosis and Campylobacteriosis ** • • • Microbiological testing records (E. Coli, Salmonella)** • Finished Product Standards, Post mortem reports (condemnation 	<ul style="list-style-type: none"> • Expert panel • Review literature • Develop a risk model which examines potential impacts of MPIP on food safety outcomes • Comparison of pathogen loads versus Salmonellosis and Campylobacteriosis • Conduct a survey of microbiological load in poultry

#I	Evaluation Question	Indicators	Data Source	Methodology
		<ul style="list-style-type: none"> • Evidence of faecal material contamination • CFIA performance framework data 	<ul style="list-style-type: none"> records), defect detection records • Records of faecal material contamination • CFIA performance framework documents 	<ul style="list-style-type: none"> products from MPIP, CPIP and traditional • Review of records • Review CFIA performance framework documents
I3	To what extent and how has CFIA increased the capacity of industry to control the safety and quality of their products?	<ul style="list-style-type: none"> • Number of MPIP accredited industry trainers • Training sessions delivered to industry • Training materials delivered to industry • Evidence of industry performance in MPIP related to safety and quality of the products 	<ul style="list-style-type: none"> • CFIA Train the Trainer Sessions Records Establishment training records (e.g., number of employees trained and accredited) • CFIA audit and inspection reports • Training manuals • Acceptable Quality Limits (AQL) and FPS Test Records • CFIA staff and plant establishment staff 	<ul style="list-style-type: none"> • Review records, reports and manuals • Review defect detection performance tests Interviews with CFIA and plant establishment staff
I4	To what extent and how effective is MPIP in building linkages towards a stronger food safety continuum?	<ul style="list-style-type: none"> • Evidence of information exchange between producers and processors as required from MPIP objectives. • Exchange of information via National Poultry Industry Association/ producers meetings. • Exchange of information with consumer associations • Evidence of information exchange in Federal/Provincial/Territorial (F/P/T) fora 	<ul style="list-style-type: none"> • CFIA MPIP Program Documents (Flock information sheet/ Inspection / Audit / “CAR” Records) • CFIA staff • National Poultry Industry Associations • Consumer associations • Records of F/P/T meetings 	<ul style="list-style-type: none"> • Review of program documents and records • Interview with CFIA staff, national poultry industry associations and consumer associations • Review of meeting minutes

#I	Evaluation Question	Indicators	Data Source	Methodology
I5	To what extent and how has CFIA increased stakeholders understanding, agreement with and/or commitment to MPIP requirements?	<ul style="list-style-type: none"> • Number of interactions between CFIA and stakeholders • Number of joint program initiatives • Exchange of information by CFIA to encourage Industry Participation • Level of understanding of MPIP • Level of agreement with MPIP • Level of commitment to MPIP • Number of MPIP pilots 	<ul style="list-style-type: none"> • Establishment staff • National Industry Producers/ Associations • Program documents (e.g. meeting records) • Program documents outlining initiatives 	<ul style="list-style-type: none"> • Survey of establishment staff • Interview establishment staff, producers, associations • Review documents

4.0 Evaluation Challenges

36. The following section outlines some challenges that may have an impact on a future evaluation of MPIP. Many of these challenges relate to data gaps, potential barriers or limitations in assessing the impacts or success of the MPIP at this time.

Performance Criteria linked to the 1997-98 Baseline Survey

37. CFIA and the national poultry industry associations made a joint decision in 1996 to conduct a national baseline survey of poultry carcasses from federally inspected slaughtering establishments, similar to the survey that was conducted by the USDA (*Nationwide Broiler Chicken Microbial Baseline Data Collection Program* (July 1994)). The sampling collection and testing procedures were also based on the aforementioned USDA survey.
38. The data that was collected from the Canadian plants was used to create the 1997-98 Canadian Microbiological Survey of Chicken Broiler and Young Turkey Carcasses. This survey document is currently used by the CFIA MPIP plants as a baseline to determine their performance in pathogen reduction. Data for this baseline survey was obtained from traditional, CPIP and MPIP plants and no correlation was made between the types of inspection programs (e.g. traditional, CPIP) that were in place when samples were collected. Since the survey integrated all the data, it would only allow a limited analysis in determining whether MPIP plants are performing as good as or better than traditional inspection or CPIP plants, in terms of their pathogen reduction efforts. The performance criteria can however be used to measure the improvement in pathogen reduction over time on an individual establishment basis.
39. Since the time the baseline study was conducted, poultry technology and processes have evolved significantly, and the data may not accurately reflect the current microbiological status of broilers in Canada. Since data is being collected within MPIP plants on an on-going basis, it is anticipated that performance criteria will be updated once the regulations pertaining to the Food Safety Enhancement Program (FSEP) are implemented in all federally registered plants. Such criteria will apply to all federally registered plants, whether this poultry is destined for domestic consumption or for international trade.

MPIP Salmonella Sampling Strategy

40. Each plant compares its *Salmonella* sampling results against the baseline study. Since plants are unique, it appears that this does not allow for comparison among establishments. As well, there may be issues related to the manner in which the samples are collected, namely over 53 consecutive days. This may make it difficult to account for seasonal influences in pathogen levels which could be a constraint in an evaluation of the MPIP.

Surveillance Information

- 41.** In the impact/success section of the evaluation matrix, reference is made to surveillance data. Unfortunately, there is under-reporting of Food borne illnesses in Canada and the data that is available, does not link raw poultry as the root cause of identifiable Food borne illnesses. Furthermore, in isolated cases where small numbers of individuals are affected, investigations which would link the root cause to the illness are not always completed. Systematic communication and collection of all Canadian Food borne illnesses data into a centralised database is not mandatory. Provinces are involved in collecting their own data on Food borne illnesses but, to date, this information has not been systematically rolled up.

Comparisons of Plants

- 42.** Although comparing the performance results amongst the MPIP plants may provide valuable information, it may be difficult to make conclusions about the results due to the variations within the plants themselves. The type of variations that could have an impact on the results achieved, include: the quality of the live birds themselves, the locations of the farm in which the poultry is grown, the transport distances that the poultry is subjected to, and the operations of the plants.

Definition of Safe Raw Product

- 43.** One of the outcomes for MPIP is that poultry products from MPIP establishments are safe and suitable for consumption. This can be somewhat misleading since there are no acceptable limits for pathogens in raw poultry that would make it “safe”. The Codex Alimentarius is attempting to arrive at a definition of meat that is safe for consumption and has focussed on the need to apply all food safety requirements appropriate to its intended use by commercial food handlers and consumers.

Farm to table linkages

- 44.** One of the intermediate outcomes of MPIP is a stronger farm to table food safety continuum. In order to understand the impact that MPIP has had on this, the effectiveness of its role in contributing to a stronger food safety continuum would have to be reviewed. The farm level involvement of MPIP is through the implementation of the flock information sheets which became mandatory in April 2002. Since the flock information sheet process is still relatively new, more time is required to determine how to use the flock information sheets effectively. Moreover, it may be difficult to demonstrate the impact that MPIP has on the pathogen loads in live poultry and the subsequent spread of hazards at the slaughtering plants (MPIP objective) since there is little quantitative information available

related to these hazards. This leads to the use of inferences only about the presence of hazards within the live flocks.

Proprietary Issue

45. Since HACCP comprises one of the four pillars of MPIP, it would be essential to review industry's HACCP plans in any evaluation of MPIP. However, since HACCP plans contain proprietary industry information, industry's cooperation is required to collect information on this topic. The same holds true for the flock information sheets. The review of this information by Health Canada would have to be addressed by both BFSA's and CFIA Program's Directors.

4.1 Evaluation Strategies

46. Three evaluation options were considered for the future assessment of this program. These were a process evaluation, a formative evaluation or a summative evaluation. A process evaluation focuses on the internal dynamics or actual operations of a program to determine its strengths and weaknesses. A formative evaluation is interested in the extent to which the program is achieving its objectives and the progress it is making towards its desired outcomes. The summative is usually completed after a program has been in operation for some time and assesses its overall effectiveness in achieving its outcomes.

4.2 Evaluation Option

47. In view of the fact that MPIP is a pilot project, a combination of a process and formative evaluation is recommended for any future assessment. This option would focus on the internal dynamics and actual operations of the program in an attempt to understand its strengths and weaknesses as well as the changes that have occurred since its implementation. It would include questions on the extent that the program is progressing towards its desired outcomes and the type of implementation issues that have emerged.
48. A variety of different perspectives could also be sought from different stakeholders. This type of evaluation can provide useful information during the pilot phase of a program. This information can then be used to make appropriate changes to the design or delivery of the program prior to a full assessment. A case study approach could be used, taking into account the actual pilot plants that are in phase 3 of MPIP implementation.
49. Finally, this proposed option would be done from a health and safety perspective and based on the role of the Food Safety Assessment Program within Health Canada. The key questions that this type of assessment would address would be the following (as taken from

the evaluation matrix).

4.3 Key Questions for Evaluation Option

50. Relevance/Rationale: *To what extent is the program relevant?*

- a. *To what extent are objectives and approach of MPIP relevant?*
 - b. *What evidence is there that Food borne illness can be reduced through the implementation of programs such as MPIP and that human health outcomes could be improved?*
- In reviewing documents including scientific literature, information would be gathered about the extent that MPIP objectives and approach are relevant in Canada. As part of this exercise, similar approaches in other countries would be reviewed, experts from different government departments, as well as academia would be consulted individually or in a panel setting. The risk assessment document entitled *Classification of Grossly Detectable Abnormalities and Conditions Seen at Postmortem in Canadian Poultry Abattoirs according to a Hazard Identification Decision Tree* would be a key document for review by the expert panel to determine the health and safety aspects of poultry slaughtering processes. Opinions about the relevance of MPIP would be gathered from stakeholders through a survey.
 - In reviewing the capacity of the program to reduce Food borne illness and improve human health outcomes, scientific literature, surveillance data, outbreak data and case studies could be reviewed. As well, questions could be posed to the expert panel or through focussed interviews with key informants on the possible correlation of the program with the level of Food borne illnesses. The development of models and review of existing models would assist in depicting the impact of such programs as MPIP on the level of Food borne illnesses and human health outcomes.

51. Program Design: *To what extent is the program design appropriate?*

- (a) *To what extent has the MPIP design incorporated appropriate activities (and where applicable science-based and statistical controls) to address the following MPIP objectives?*
 - control of hazards associated with the contamination of live poultry with Food borne pathogens as received at registered establishments, and the subsequent spread of these pathogenic bacteria during the slaughter and processing of poultry;
 - promote the active control (prevent, eliminate or reduce) of hazards through the implementation of a CFIA recognized HACCP system in poultry slaughtering

establishments;

- facilitate the assumption by industry of the detection and handling of all carcasses with defects (previously performed by CFIA inspectors) under continuous government oversight, noting that the decision for eventual disposition of carcasses with defects is made by a CFIA veterinarian.
- Literature would be reviewed with regards to the control of hazards associated with raw poultry. The CFIA program documents including relevant guidelines and available flock information sheets would be reviewed. The expert panel could also provide their views on the extent to which MPIP has incorporated activities to address control of hazards, implementation of HACCP, that are based on science and statistically sound methods. The panel will also compare MPIP design and policy with identified risks in raw poultry. It would also be essential to review the available industry verification data related to their HACCP plans.

52. Program Delivery: *To what extent is the program delivery appropriate?*

- (a) *To what extent is MPIP implementation consistent with the program design and program objectives relative to the following objectives? (see the same objectives as stated above).*
- In reviewing verification and inspection/monitoring activities reports, information will be gathered to determine the consistency of the program design and program objectives with the implementation of MPIP. Officials within plant establishments and CFIA would be interviewed to explore their views on this question.
- (b) *How does CFIA use health and safety corrective actions requests to ensure effective delivery of the MPIP program?*
- In reviewing corrective action requests (CARs) pertaining to health and safety issues and the follow-up documentation to those selected CARs, information will be gathered to evaluate the effectiveness of the CFA's activities in obtaining compliance.

53. Impacts/Success: *What is the extent of the program's impact?*

- (a) *To what extent and how is MPIP controlling hazards associated with the contamination of live poultry with Food borne pathogens as received at registered establishments, and the subsequent spread of these pathogenic bacteria during the slaughter and processing of poultry?*
- Literature would be reviewed with regard to the control of hazards associated with live poultry as stated in the foregoing objective of MPIP. Since there is currently insufficient information regarding pathogen loads in live poultry, the development of

an inference model using finished product data would be necessary to clarify the situation. It would also be necessary to review any information pertaining to follow up actions as a result of flock information sheet review.

- (b) *To what extent and how does MPIP promote the proactive control (prevent, eliminate or reduce) of hazards through the implementation of a CFA-recognized HACCP system in poultry slaughtering establishments?*
- It would be essential to review of FSEP (HACCP) recognition and audit records, deviation plans and actions to evaluate how thoroughly MPIP promotes the proactive control of hazards. As part of this exercise verification data of effectiveness of CCPs would also be looked at.
- (c) *To what extent and how effective is MPIP in building linkages towards a stronger food safety continuum?*
- This question attempts to determine the extent to which this program is building linkages towards a stronger food safety continuum through the involvement of stakeholders, as defined earlier in this document. To answer this question it would be essential to review program documents and records, interview CFIA officials, poultry associations and consumer associations representatives.
- (d) *To what extent has MPIP been effective in improving food safety outcomes ?*
- A preliminary step would be to review CFIA performance framework documents to identify CFA's food safety outcomes. Literature would be reviewed with regard to the effectiveness of MPIP in improving food safety outcomes (e.g. salmonellosis, campylobacteriosis). The expert panel could also provide their views on this question. The development of a risk model which would examine the potential impacts of MPIP on food safety outcomes would be required. This model would compare pathogen loads and Food borne illnesses such as salmonellosis and campylobacteriosis. For more specific data, a survey of microbiological load in poultry products from MPIP, CPIP and Traditional inspection modes could be conducted. The review of records of faecal material contamination would provide useful information in answering this question.
- (e) *To what extent and how has CFIA increased the capacity of industry to control the safety and quality of their products?*
- After the expert panel has determined the health and safety aspects of poultry slaughtering processes based on a discussion of the risk assessment document entitled *Classification of Pathological Conditions seen in Canadian Poultry Abattoirs According to a Hazard Identification Decision Tree* as well as other relevant documents, this question can be evaluated. The interest of Health Canada is on the extent to which CFA has increased the capacity of the industry to control the safety of

their product.

5.0 Conclusion

54. In light of the selected evaluation questions and evaluation challenges listed in this framework, the Bureau of Food Safety Assessment would like to provide some advice or guidance which may assist in the planning for the future assessment of MPIP. We consider that the expert panel that would aim at answering the question of relevance for MPIP using the risk assessment of the hands-on inspection process (*Classification of Pathological Conditions seen in Canadian Poultry Abattoirs According to a Hazard Identification Decision Tree*) is a key methodology and will impact on many aspects of the evaluation. The challenges that are outlined in this document may warrant a delay of the assessment of MPIP for one to two years or for a period of time after mandatory FSEP has been implemented. In the interim period, it may be feasible for the CFIA to address some of the limitations as part of the planning for the eventual assessment.
55. In particular, we would like to mention the limitations outlined in our earlier reference to the baseline survey. As we mentioned earlier, since the survey integrated all the data, it would only allow a limited analysis in determining whether MPIP plants are performing as good as or better than traditional inspection or CPIP plants, in terms of their pathogen reduction efforts. We understand that with the future advent of mandatory FSEP, all federally registered plants will be required to conduct *Salmonella* and *E. coli* testing in order to reduce pathogen levels in poultry. This would be an appropriate time to develop new performance criteria which could be derived from the creation of a new baseline survey. Should such a survey be conducted, it would be useful to think about a new design which would differentiate all the different modes of inspection so that MPIP performance can be highlighted.
56. In terms of the pathogen reduction effort, we have indicated that there may be issues around the manner in which salmonella samples are collected, namely over 53 consecutive working days. It is suggested that consideration be given to extending the collection of samples throughout the entire year or limiting sample collection to one season only (preferably during peak seasonal incidence for contamination), in order to ensure that seasonal considerations are taken into account. The expansion of the number of samples taken could also be considered.
57. We indicated that surveillance information is limited to link raw poultry to food borne illnesses due to under-reporting of information. This is an issue that needs to be highlighted with both the CFIA and Health Canada. Consideration should be given to developing a solution to this difficult problem of finding the underlying source for food borne illnesses. Further discussion should occur on this issue in order to find a solution.

- 58.** Although we indicated that the information that we received did not support a comparison among plants due to the variations that exist, this idea could still be explored. Once FSEP is mandatory, there would be a greater pool of plants that could be used for comparison purposes. It may be possible to find “similar” plants within each region that offer various modes of inspection, all of which practice pathogen reduction efforts. A control group of plants that do not have MPIP could be established with a view to comparing their performance results with the MPIP plants.
- 59.** In the farm to table linkage, we noted that there is a linkage for MPIP to the farm through the flock information sheets. The flock information sheets are a relatively new tool and the information that this provides needs to be fully explored. Although the flock information sheets are primarily an industry document, the compilation of the observations of the CFIA veterinarians, either written on the flock sheet itself or in another document that is retained for reference purposes, would be invaluable in developing any trends analyses and follow-ups on issues, thus providing a valuable evaluation tool.
- 60.** Since the other part of the farm to table linkage involves the consumer, it may be of value for the CFIA to explore how consumers could be involved regarding MPIP. This might provide information that could be useful in a future assessment.
- 61.** Finally, it is noted that the mandate of the Health Canada’s Bureau of Food Safety Assessment is to focus on the health and safety aspects of assessments. While other aspects of the MPIP could provide useful information to the CFIA , the Bureau of Food Safety Assessment would focus its assessment on the key health and safety questions as outlined in this document, utilising the proposed methodology.
- 62.** As outlined in the Health Canada policy on the Food Safety Assessment Program, the decision on whether and when to conduct an assessment of MPIP will be made by the Advisory Committee.

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Appendix 1

Modernized Poultry Inspection Program Description

- 1.** Processors wishing to operate under MPIP must have a recognized HACCP system in place to ensure optimal process control. Industry is responsible for identifying steps in food production where contamination is most likely to occur and for establishing controls that prevent or reduce contamination. CFIA inspectors verify that the critical control points in MPIP processing establishments operate under adequate control. On average, a Canadian poultry plant runs one evisceration line and will have one Veterinarian-in-Charge and two CFIA inspectors (one evisceration floor inspector per line working on the slaughter floor and one processing area inspector).
- 2.** Producer farms are required to submit flock information sheets. Flock information sheets contain information regarding the feed and water withdrawal period which can influence evisceration accidents and carcass contamination. Flock information sheets also provide: information regarding vaccinations, disease outbreaks during the growth period; veterinary services and treatments; information regarding feed medications; and the on-farm mortality rate during the growth period. Establishment operators are responsible for establishing and maintaining computerized condemnation data on each producer delivering lots to the establishments. The CFIA Veterinarian-in-Charge has access to this information and can intervene as necessary to ensure control of any poultry that may have been exposed to hazards on the farm. The operator may use the information to guide adjustments in the slaughter and evisceration process in order to prevent anticipated problems. It is the operator's responsibility to decide on slaughter procedures and the CFIA Veterinarian-in-Charge to make decisions on disposition.
- 3.** In MPIP poultry slaughter plants, incoming loads of live poultry are inspected by the CFIA Veterinarian-in-Charge (antemortem inspections) to evaluate the general health of the transported birds. Prior to evisceration, trained and accredited industry employees detect and remove all obviously condemnable carcasses to ensure only visibly acceptable carcasses are eviscerated and processing equipment contamination is minimized. Some visible defects associated with poultry are considered food safety hazards, while others are aesthetic flaws not linked to a human health hazard.
- 4.** After evisceration, the poultry carcass and corresponding viscera are presented for cavity and viscera defect detection (postmortem inspection). Carcass presentation at postmortem inspection must be uniform and consistent given the high line speeds associated with processing. For this reason, presentations tests are carried out by the processing establishment and CFIA inspectors perform independent verification tests of the hourly presentation tests.

5. Carcass cavity and viscera are inspected for defects by trained and accredited establishment employees. All carcasses with identified defects are either disposed of, trimmed or redirected to the Veterinarian-in-Charge for inspection and final disposition. The CFIA has established the average prevalence of internal and external carcass defects and viscera defects immediately after inspection. The CFIA inspector evaluates the performance of the establishment defect detectors by sampling inspected carcasses and comparing the results of his inspection against acceptable quality limits.
6. Prior to and after chilling, poultry carcasses are monitored by establishment employees for compliance with Finished Product Standards for quality defects. These standards reflect the zero-tolerance requirement for visible faecal contamination. CFIA inspectors verify that extraneous material is not being picked up during the chilling process.
7. MPIP includes the microbial testing of chilled raw poultry carcasses. *E.coli* is used as an objective indicator of the general level of operational hygiene. Interim Action Levels are intended to specifically provide an initial basis upon which slaughter establishments and the CFIA staff can begin to use microbial testing to evaluate the adequacy of establishment process controls. *Salmonella spp* Interim Action Level indicates control over the level of this pathogen on chilled poultry carcasses prior to shipping. The microbial criteria (IALs) for these two organisms were established from a national baseline survey referred to as the Canadian Microbiological Survey of Chicken Broiler and Young Turkey Carcasses.
8. Until an equivalency agreement with the United States is negotiated, MPIP establishments are required to have one CFIA inspector on each slaughter line to inspect all poultry carcasses if they want to remain eligible to export to the United States.
9. In summary, the four pillars of MPIP are:
 - HACCP system to ensure a controlled process to eliminate or reduce biological, chemical and physical hazards;
 - Mandatory submission of flock information sheets;
 - Postmortem inspection by trained and accredited industry defect-detector personnel rather than by government inspectors; and
 - Microbiological testing for generic *E. coli* and *Salmonella* to assess establishment sanitation and hygiene and pathogen reduction.

MPIP Implementation

10. There are various steps for implementing the MPIP. Canadian establishments operating under MPIP must meet the following requirements:

- Operate under a CFIA recognized HACCP System;
- test for generic *E. coli* as a verification of slaughter procedures and Critical Control Points; and
- test for *Salmonella spp* to verify the operators HACCP system's effectiveness in achieving Pathogen Reduction Goals

11. The transition to MPIP is done in three phases.

- **Phase 1 - Implementation:** Implementation begins after a CFIA preliminary assessment of a volunteer plant's eligibility to participate in the modified inspection program.. Baseline data are collected and analyzed before MPIP implementation. A list of requirements, "Area MPIP Implementation Team On-site Review" must be satisfactorily completed prior to advancing to Phase 2. These requirements include: a HACCP system with ongoing *E. coli* and *Salmonella spp.* testing and analysis of results; establishment Quality Control staff and sufficient establishment carcass (preselectors), cavity and viscera detectors are trained and qualified. CFIA maintains the same number of on-line government inspection stations as existed under the previous system of postmortem inspection at the establishment.
- **Phase 2 - Trial Period:** In the trial phase CFIA inspectors back up plant personnel in detecting defects on the slaughter line. Plant personnel are required to pass four weekly practical on-line tests as viscera detectors. In addition, the plant must also pass a Headquarter (HQ)/Area HACCP-MPIP system compliance and verification review.
- **Phase 3 - Data Collection:** This phase entails operating under MPIP as described previously and the collection and analysis of data after MPIP's implementation at the plant. The MPIP operating plant continues collecting data for a minimum of 12 months. The plant must pass a second HQ/Area HACCP-MPIP system compliance and verification review.

Appendix 2

Summary of International Poultry Inspection Programs

- 1.** The concern for better control of hazards in foods has resulted in a movement away from traditional end-product monitoring to the development of preventative systems that monitor and control processing steps prior to the production of finished products. This has prompted many governments and food industries around the world to regard Hazard Analysis and Critical Control Points (HACCP) as an effective preventative system to control hazards.
- 2.** Some countries like the U.S., Canada and Australia, have decided to introduce, in collaboration with industry, the HACCP approach in the meat and poultry slaughter industry. The HACCP approach is risk-based and makes industry, rather than government inspectors, responsible for identifying steps in food production where food safety hazards are most likely to occur and for establishing controls that prevent or reduce these hazards from occurring. In some countries, this has involved the redefinition of the roles between government and industry, with industry assuming greater responsibility over the detection of carcass defects.
- 3.** A literature review was conducted of the poultry inspection programs and strategies used in countries such as Australia, the United States, Denmark and Sweden. In particular, there was a focus on obtaining information on the role of the regulator, the implementation of HACCP, antemortem activities (including submission of flock information sheets from producers), postmortem inspection activities (including the transfer of these activities to the industry) and the use of microbiological testing for pathogen reduction and control. In some cases the information that would allow a comparison between different programs was not found.

Australia's Meat Safety Enhancement Program (MSEP)

- 4.** Australia does not have a federal poultry inspection system but operate with a State system. Australian Quarantine and Inspection Service (AQIS) sets public health product standards and audits plant operations to ensure that food safety standards are being achieved. In response to a 1996 regulatory decision that made HACCP mandatory in all meat processing establishments, AQIS developed the Meat Safety Enhancement Program (MSEP) as a new inspection approach for Australian meat export plants which was designed for red meats. MSEP is comprised of a HACCP-QA (Quality Assurance) system and routine meat inspection under an establishment specific AQIS-approved QA. The responsibility for visual inspection of carcasses, cavity and viscera have been transferred from AQIS to the Australian industry. Establishment inspectors are trained in accordance with a standardized curriculum. Thus, routine meat inspections are performed by qualified industry employees. AQIS officers maintain full-time oversight, conduct industry performance verifications and certify final products for export. The system has been progressively implemented at four

export registered meat processing plants since October 1997.

5. The principle of MSEP has been acknowledged by the Quadrilateral countries (USA, New Zealand, Canada and Australia) and has been recently endorsed by the World Congress on Red Meat and Poultry Inspection. According to the available information all Australian export slaughtering establishments are required to sample for *E.coli* and *Salmonella* prior to exporting to the U.S. However, the Australian documentation located on the AQIS website (“AQIS Notice Meat: 96/46, NFS: 16, 17, Titled: Implementation of the Bacteriological Testing Requirements of the US Pathogen Reduction Program”) seemed to indicate that these microbiological tests were not applied to exported poultry products. Based on the available documentation on this program, the exchange of information (via flock information sheets) between Australian producers and processors does not seem to be a component of the MSEP program.

USA’s HACCP-based Inspection Models Project (HIMP)

6. The Federal Meat Inspection Act and the Poultry Products Inspection Act give the USDA overall responsibility for ensuring the safety and wholesomeness of meat and poultry products that enter interstate commerce. Acting under these legislative authorities, the USDA has engaged in continuous government inspection of each and every carcass at slaughter plants throughout the United States. Within the USDA, the Food Safety and Inspection Service (FSIS) is responsible for inspections at all meat and poultry slaughter and processing plants and for ensuring plants’ compliance with regulatory requirements.
7. In 1997, the USDA developed a HACCP-Based Inspection Model Project (HIMP) for poultry inspection. This project model includes a pathogen reduction strategy and Hazard Analysis and Critical Control Point (HACCP) approach. HIMP was designed to test whether new government slaughter inspection procedures, applied with revised plant HACCP controls and new plant process controls, can improve food safety and increase consumer protection. Under HIMP the USDA transferred to industry the responsibility for identifying carcass defects which is consistent with the HACCP approach. A reduced number of federal inspectors remain in the plants to verify product safety and quality through increased testing and observation of industry’s performance. However, the December 2001 report by the General Accounting Office (GAO) was critical of the lack of a training requirement for plant employees prior to conducting defect detection.
8. HIMP uses a science-based statistical approach by requiring microbiological testing to monitor the effectiveness of the sanitation and process controls implemented by slaughter establishments. A baseline study was conducted to establish *E. coli* and *Salmonella* performance standards limits for end products. Based on the available documentation, the exchange of information between producers and processors (via flock information sheets) does not seem to be a component of the HIMP program.

Denmark's Poultry Inspection System

9. Denmark's Veterinary and Food Administration's (DVFA) mission is to promote safety, health and quality from farm to table. According to DVFA the responsibility for compliance with the rules, including requirements determined by the European Union (EU) Executive Orders and any requirements emanating from third countries, lies with the primary producers and the companies. Companies and primary producers are required to set up internal control programs based on the HACCP principles. The Danish authorities are only involved in a few areas such as the inspection of animals for slaughter.
10. In the beginning of the 1980's it became evident that many broilers were contaminated by *Salmonella*. The Veterinary Service and the Danish Veterinary Laboratory, in collaboration with the industry, introduced a monitoring program consisting of bacteriological examination of 16 broilers per flock prior to slaughter. This monitoring procedure led to the assumption, that if hatching eggs and chicken feeds were salmonella free, the broiler production would also eventually have a much lower contamination level.
11. In 1989, it became necessary for the broiler industry to introduce a voluntary control program. This program consisted of agreements for the production of poultry feed, rules for importation of breeding material, hygienic measures throughout the production, and for the continuous monitoring of the broiler production and the flocks producing eggs for hatching. In 1991, the Antemortem (AM) control of all broiler flocks was introduced. This meant that a veterinarian from the Veterinary Service must inspect each flock before it can be sent for slaughter.
12. In 1996, the Danish Ministry of Agriculture and Fisheries implemented an even more extensive control program for *Salmonella* in Danish poultry. Among other things, the program included testing for all *Salmonella* serotypes in parent animal flocks. The program originally included all parts of the table egg production as well as slaughtering *Salmonella* infected flocks and cleaning and disinfecting *Salmonella* infected houses.
13. In early 1998, the situation in the breeder flocks had been brought under control and only occasional flocks had been found positive for *Salmonella*. If *Salmonella* is detected, the birds must only be slaughtered after all flocks free of *Salmonella* have been slaughtered. It should be noted that according to the available documentation, there is no *E. coli* testing program.

Swedish *Salmonella* Control Program

14. The Food Division of the Ministry of Agriculture, Food and Fisheries of Sweden has responsibility for the following areas: foodstuffs, consumer issues, market regulation of livestock production, equalisation of primary product costs for foodstuffs, statistics about food production and the food industry, as well as promotion of export.
15. Sweden has achieved an effective control of *Salmonella*, and in fact, the prevalence of *Salmonella* is less than 0.1% in poultry at slaughter. The overall aim of the Swedish *Salmonella* control program is that animals sent for slaughter shall be virtually free of *Salmonella*, which ensures that animal products for human consumption will be free of *Salmonella*.
16. The Swedish *Salmonella* control program encompasses the food continuum and includes the following strategies:
 - to prevent *Salmonella* contamination in all parts of the production chain,
 - to monitor the whole production chain (feed, live animals, carcasses, food), and
 - to take obligatory actions in order to eliminate any *Salmonella* infection /contamination in food.
 - All *Salmonella* serotype infections in any animal species is notifiable and all primary isolates are characterized by sero- and phagetyping and tested for antibiotic resistance. To keep the poultry flocks free of *Salmonella* the following four factors are considered to be important aspects of control by the Swedish government:
 - all grandparent animals are imported and all are quarantined and repeatedly tested negative for *Salmonella*,
 - feed control consists of three parts: import control of feed raw materials, mandatory heat treatment of compound feeding stuffs for poultry and an HACCP-based *Salmonella* control in the feed industry,
 - high hygiene and biosecurity standards are in place, preventing introduction of *Salmonella* and
 - the elimination of the herd is always carried out in case of *Salmonella* infection in poultry, irrespective of serotype.
17. An extensive sampling program has been implemented that continuously monitors the *Salmonella* situation both at flock level and at the end product level within all poultry slaughterhouses. If *Salmonella* is isolated from a poultry flock an official veterinarian immediately places restrictions on the whole farm. An investigation to trace the source of the infection or any spread of the infection is carried out and official samples are collected. The *Salmonella* infected flock is destroyed irrespective of serotype and the empty poultry house is thoroughly cleaned and disinfected under supervision of the official veterinarian. Environmental samples are collected after disinfection and have to be negative before restrictions are lifted and new birds are allowed into the house. In addition, the Swedish Regulations prohibit the vaccination of poultry against salmonellosis.

Conclusion

18. From a review of the literature with regard to the identified countries, it is evident that these countries have adopted common goals in poultry inspection practices such as the implementation of HACCP and the increased responsibility of industry in identifying hazards in food production. As well, there are some variations in practices with respect to the control of pathogens like *Salmonella*. While some countries have strategies to control *Salmonella* at the farm level and others at the slaughterhouse level, there is an overall recognition that action must be taken to deal with the hazards associated with raw poultry.

Appendix 3

Summary of Stakeholder Interviews

1. The team interviewed three stakeholder groups, namely the Chicken Farmers of Canada, the Canadian Poultry and Egg Processors Council and the Further Poultry Processors Association during our information gathering exercise. This section of the framework presents their activities, their role in the regulatory environment and their views of MPIP.

The Chicken Farmers of Canada (CFC)

2. The Chicken Farmers of Canada represent approximately 2,800 members who are Canadian chicken growers. The CFC is a national farmer-run organization that is completely funded through levies that farmers pay according to the amount of chicken marketed. Their main responsibility is to ensure that farmers produce enough chicken to meet the needs of the market place, a system known as supply management. Another of their key responsibilities is to ensure that key decision makers in the federal government fully understand the concerns and interests of Canada's chicken farmers, and that they take them into account when important agriculture and trade policy decisions are being made.
3. The Chicken Farmers of Canada (CFC) have been primarily involved in the creation of the flock information sheets and in the development of an instructional manual for the on-farm food safety program. This manual which was completed with provincial collaboration, is called *Safe, Safer, Safest- Growing Safe, Clean Canadian Chicken*. The CFC has obtained technical recognition for their on-farm food safety program from the CFIA and has recently developed the audit structure that third parties will use in auditing the on-farm food safety program. In addition, Agriculture and Agri-Food Canada is promoting mandatory HACCP for on-farm food safety by 2008.
4. The CFC expressed the need for detailed reasons for condemnations to help growers improve on-farm food safety. They also suggested that if the Canadian microbiological baseline study on poultry was to be repeated, samples also be taken at live receiving.

Canadian Poultry and Egg Processors Council (CPEPC)

5. The Canadian Poultry and Egg Producers Council (CPEPC) represent 80% of the poultry industry and the interests of more than 170 Canadian poultry processors, egg processors and hatcheries. In addition, their membership includes over 60 national and international industry partners who have joined as Associate members. The CPEPC lobbies the political capital, deals with supply management issues, farm prices, trade issues and assists industry in developing their position. Their various technical and policy committees address the

concerns of their membership.

6. Discussions with CPEPC poultry industry representatives focussed on the advantages and areas for improvements of implementing the MPIP. The main advantages include a feeling of ownership of processing and inspection activities. Hence, morale has improved as a result of the redefined roles of CFIA and industry. Line speeds can be increased (based on performance) resulting in economic advantages for companies. It is their opinion that the results produced under MPIP by industry are as good as or better than traditional inspection.
7. In terms of room for improvement, industry representatives indicated that all producers need training on the use of the flock information sheets to supply them to the producer in a timely manner and to improve the quality and accuracy of the information on them. There was a concern expressed over the need for CFIA to get more involved in the content of the flock information sheets. Finally, some plant managers indicated that there is a need for more exposure to European systems in terms of on-farm food safety programs.

Further Poultry Processors Association

8. The Further Poultry Processors Association is a trade association that represents over 80% of the further processing companies. Their mandate is supply management for processors and participation in proposals for regulatory change. The association was founded by three independent further processors (post-slaughter processing) in August of 1985. Their members are engaged in adding value to chicken, turkey, and fowl meat by way of sizing, marinating, breading, cooking, forming and adding other ingredients to make ready-to-eat or cooked products and meals. Currently, the association is made up of 31 active further processors and 9 associate/supplier members from across Canada.
9. Representatives from the Further Poultry Processors highlighted traceability issues as an area that requires attention because this connects the chicken in the plant back to the actual grower. A seamless food safety system should be the goal.
10. Concerns were raised by the FPPC as to the usefulness of the salmonella testing exercise, as there is no current acceptable level for salmonella in poultry. The focus should be on ensuring that there is no opportunity for the growth of pathogens during processing. The on-farm food safety program was mentioned as a potential gap in the gate to plate continuum as the poultry plants and MPIP in particular, have limited involvement in this (linked only through the flock information sheets). Finally, in the opinion of FPPC the food safety and quality issues need to be addressed more clearly under MPIP whereas quality issues should be dealt entirely by industry, while the CFIA should place its focus solely on food safety.