

*Food and Nutrition
Surveillance in Canada:
An Environmental Scan*

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Executive Summary

A healthy diet, nutritional well-being, and a safe nutritious food supply are essential contributors to a healthy, productive population. Food and nutrition public policies and programs that enhance population health require a strong evidence base and the capacity to measure outcomes. This necessitates an effective surveillance capacity. For an extended period of time there has been a very significant lack of current, relevant national food and nutrition surveillance in Canada. It is almost three decades since national population-based data on food consumption, and related physical and biological measures, were collected. Such information is urgently needed to support policy and program development, to measure the impact and outcomes of policies and programs, and to anticipate emerging issues to allow a proactive response.

This Environmental Scan presents an overview of the current context for and status of food and nutrition surveillance in Canada. The purpose is to provide a foundation for action to improve the situation. It was prepared for a working group made up of representatives of various branches of Health Canada and representatives of the Federal, Provincial and Territorial Group on Nutrition. Information was gathered through document review and key informant interviews.

Definition, Uses and Users. Food and nutrition surveillance is defined as the tracking and forecasting of nutrition-related health events and determinants. It involves the collection, integration, analysis, interpretation and dissemination of data on food and nutrient intakes; food safety and environmental exposures; nutritional status; nutrition-related health outcomes; knowledge, attitudes and practices for healthy eating and other lifestyle factors; demographics; personal and environmental health determinants; and factors affecting access to safe, affordable nutritious foods. This information is needed to inform the development and measure the outcomes of public policies; support the development, operation and evaluation of programs and services; advise and educate the public; and provide direction and data for research. The federal government, provincial/territorial governments, regional and local public health agencies, non-government health organizations, researchers, the food industry, and consumer organizations are the main users of food and nutrition surveillance information.

System Requirements. An effective national food and nutrition surveillance system for Canada should include a range of data sources built around a core program of periodic population surveys of a nationally representative sample of all ages; and the capacity to link food, nutrition and other health-related data. The system must provide the capacity to monitor trends and anticipate and respond to emerging information needs, including those of special populations, and be designed to offer an optimal interface with research activities. The scope must be realistic and feasible. Priorities and objectives must be set based on the most important policy and program needs for surveillance information. A sustained commitment to adequate and ongoing financial and logistical support for the system is essential, because effective surveillance cannot be done through a series of ad hoc, time limited initiatives. Development and support of the system should involve key

stakeholders, partners and users. The system must be cost-effective, accountable, and based on the needs of its stakeholders and users.

The Context for Enhanced Food and Nutrition Surveillance. The need to improve Canada's food and nutrition surveillance capacity is being driven by many significant pressures for change, and must recognize and respond to opportunities and challenges in the current environment.

PRESSURES FOR CHANGE

- Poor nutrition is a key preventable risk factor for the major chronic diseases that take a huge toll in morbidity, disability and premature death in Canada. The annual economic burden of unhealthy eating in Canada has been estimated at \$6.3 billion, including direct health care costs of \$1.8 billion. Public interest in healthy eating is high, but nutrition-related health problems remain at high levels.
- Public concern about food risks and food safety is increasing. Environmental food contamination is a growing issue. The food supply and food consumption patterns are changing rapidly. Policies and programs to support food safety, healthy eating and nutritional well-being require a capacity to monitor changes and risks in the food supply and in consumption patterns and nutritional status.
- Better nutritional surveillance of children is required to support healthy child development as a policy priority of the federal and provincial/territorial governments.
- Aboriginal peoples experience a high incidence of nutrition-related health problems. Improving health outcomes for aboriginal peoples, one of Canada's highest public health priorities, requires better surveillance information.
- Access to food and food insecurity are growing concerns. Information is needed to better understand the nature and magnitude of this issue, and to develop strategies to address it.
- Monitoring the increasing use of dietary supplements and emerging issues such as nutraceuticals and functional foods is critical for public education, assessment of health claims, labeling requirements, and development of policies to help ensure safe and appropriate use.

OPPORTUNITIES, LINKAGES AND FACILITATING FACTORS

- New information technologies and new biotechnologies are enabling dramatic advances in what is possible in nutritional and health surveillance.
- Improved health information, including enhanced health surveillance, is a priority of federal and provincial/territorial (FPT) governments – to enable more effective evidence-based health system decision making.
- Key FPT bodies provide opportunities to advocate for and develop enhanced food and nutrition surveillance, particularly the FPT Advisory Committee on Health Infrastructure and the FPT Advisory Committee on Population Health.

- The Roadmap Initiative, a collaborative effort between the Canadian Institute for Health Information (CIHI), Statistics Canada and Health Canada, has as a key priority better monitoring and tracking of information on current and emerging health issues, which should include food and nutrition.
- Several new initiatives within Health Canada have potential linkages with food and nutrition surveillance including the Network for Health Surveillance, and various initiatives to improve the food safety and nutrition capacity of the Department.
- Food and nutrition surveillance is becoming an international priority. This provides opportunities for collaboration with other countries and the possibility of internationally linked surveillance data bases.

CHALLENGES

- Development of an effective national food and nutrition surveillance capacity will be costly and complex. There will be pressures to make the system extremely extensive to meet the needs and agendas of a wide range of users and stakeholders, which could hamper feasibility and put the cost out of reach.
- Taking advantage of new technologies and focusing on future needs will require deliberate efforts, but is essential. The tendency will be to answer the questions of the past, not the future, and to be limited by the methodologies people are most familiar with.
- Development of a national food and nutrition surveillance system will inevitably be a collaborative effort. An excellent process for initiating and managing collaboration will be required to achieve timely results.
- Factors associated with the lack of success of efforts over the two decades to develop a national food and nutrition surveillance capacity will have to be overcome.
- Canada's overall surveillance capacity must include Aboriginal peoples while recognizing their unique needs and interests, particularly around issues of community involvement and ownership and control of data.
- Appropriate ways to involve the food industry, given concerns about potential bias, will be needed.

Existing Food and Nutrition Surveillance Data Sources. Canada has never had a systematic program of national food and nutrition surveillance. The *Nutrition Canada Survey*, conducted in 1970-72, was the first and only comprehensive national nutrition survey. Although it was intended to be longitudinal, it has never been repeated. Since then, there have been various health surveys and other initiatives (most not focused specifically on nutrition) that provide some of the data to meet some national nutrition surveillance needs. These existing data sources are described in the Environmental Scan, and are linked to key surveillance questions and information needs concerning the food supply, the intake of food and nutrients, and the nutritional and health status of the population.

Gaps and Limitations. There are significant gaps and limitations that make the available national food and nutrition surveillance data marginally useful for policy and program development, for evaluation of the outcomes of public policies and programs, and for research and other key purposes. The following are major problems.

- The only regularly available national consumption information is derived from food expenditures, which provides only a gross estimate not suitable for understanding the nutritional state of the population, for identifying groups at nutritional risk, or for risk assessment of food safety.
- Physical measures and biomarkers of nutritional status, environmental exposures, health outcomes and their links are unavailable. There is no capacity to link genetic characteristics, nutritional status and health outcomes.
- There are significant problems in aggregating the data from provincial nutrition surveys conducted from 1990-1999 to provide a valid national picture of food intake and nutrient status of adults.
- There is virtually no information on food intake and nutrient status of children, older Canadians or Aboriginal populations.
- There is no systematic, comprehensive national surveillance of environmental exposures and food contaminants/risks.
- The very limited data sources that are available cannot be linked to understand the relationships between dietary intakes, nutritional status, environmental exposures, nutrition related knowledge, attitudes and behaviors, health status and health determinants.
- There is no national information to better understand food insecurity and its impacts and solutions.

Considerations for Aboriginal Populations. There are some unique considerations and issues with respect to surveillance initiatives for Aboriginal populations. Surveillance must be culturally appropriate to meet community needs and realities, and ensure extensive community involvement at all stages. Overall success factors for aboriginal surveillance initiatives are community ownership and control of data, a focus on building community capacity, an integrated approach from planning to analysis to data dissemination, a sustained approach with follow through on initiatives, and linkage and integration between different health surveillance initiatives.

International Comparisons. Australia, New Zealand, the United States and the United Kingdom were included in the environmental scan because their populations, food supply, and health issues are quite similar to Canada's. Unlike Canada, each of these countries has a major national nutrition survey in place. The U.K. and the U.S. have an ongoing program of rolling population surveys that cover all age groups. Australia and New Zealand have recently completed a major national survey, with a commitment to periodically repeating the survey. The U.S. has an extensive nutrition monitoring system that includes over 90 separate monitoring surveys/activities/systems. Key informants from the four countries indicated that the results of their national nutrition surveillance

systems are well worth the expense involved, and make an invaluable contribution to public policy, program development and monitoring of outcomes.

Food and Nutrition Surveillance in Canada: An Environmental Scan

1. Background and Purpose

A healthy diet, nutritional well-being, and a safe nutritious food supply are essential contributors to a healthy productive population. The result is lower health care and social costs, and better quality of life for all Canadians.

Food and nutrition public policies and programs that enhance population health require a strong evidence base and the capacity to measure outcomes. This in turn requires an ongoing surveillance capacity to measure and monitor food and nutrient intakes, food safety, nutritional status, nutrition-related health outcomes, as well as knowledge, attitudes and practices for healthy eating and other lifestyle factors such as physical activity. This information must be linked to data on demographics, personal and environmental health determinants, and factors affecting access to safe, affordable nutritious foods. All of this information must be available for the overall population of all ages and for vulnerable sub-populations.

For an extended period of time in Canada there has been a very significant lack of current, relevant national food and nutrition surveillance information. It is almost three decades since national population-based data on food consumption, and related physical and biological measures, were collected. There are no data linking dietary practices, nutritional indicators, and social, economic and other data to disease and health outcomes. Data on biological indices of nutritional status and disease outcomes are scarce and need to be developed or improved before these data can be linked. There is little information on exposure to environmental contaminants in food and the link to health outcomes. Such information is urgently needed to support policy and program development, to measure the impact and outcomes of policies and programs, and to enable a proactive response emerging issues.

Improvements in Canada's food and nutrition surveillance capacity are essential. This document presents an overview of the current context for and status of food and nutrition surveillance in Canada. The purpose is to provide a foundation for action to improve the situation. It has been prepared for a Working Group made up of representatives of various branches of Health Canada and representatives of the Federal, Provincial and Territorial Group on Nutrition (see Appendix C for a list of Working Group members). It is the first step in development of a national plan for food and nutrition surveillance. A companion document provides the rationale and makes a case for investment to ensure an effective food and nutrition surveillance capacity in Canada.

This environmental scan should be of interest to all those concerned with improved food and nutrition surveillance, and particularly to decision makers and potential partners who may be involved in developing and implementing a more effective health surveillance capacity in Canada.

The information presented in this document is based on a review of existing documents. As well, key informant interviews were conducted to bring the food and nutrition-related perspectives of government and non-government organizations, researchers, and Aboriginal organizations in Canada. Representatives of national governments in Australia, New Zealand, the United States and the United Kingdom were also interviewed, and documents from those countries were reviewed. Key informants are listed in Appendix A.

2. What Would Constitute an Effective Food and Nutrition Surveillance System?

2.1 Definition and Terminology

Health surveillance has been defined by the Network for Health Surveillance in Canada as “the tracking and forecasting of any health event or health determinant through the collection of data, and its integration, analysis and interpretation into surveillance products, and the dissemination of those products to those who need to know.”

For food and nutrition surveillance, the focus is collection, integration, analysis, interpretation and dissemination of data related to food and nutrient intakes; food safety and environmental exposures; nutritional status; nutrition-related health outcomes; knowledge, attitudes and practices about healthy eating and other related lifestyle factors; demographics; personal and environmental health determinants; and factors affecting access to safe, affordable, nutritious foods.

Surveillance is not investigation, planning, intervention, research, priority setting, policy development, issue management or risk management. But surveillance provides information essential to all of these activities.

The following are key characteristics of surveillance:¹

- Surveillance tends to be prospective and purposeful. It involves the organization of specific means of acquiring data in anticipation of its use rather than sifting through already-acquired data.
- Surveillance involves the collection of data in a continuous fashion, or at least at regular intervals. It is especially concerned with health events or influences which are subject to change, and the tracking of trends in those events.
- Surveillance information is population-based. It is concerned with health effects and determinants in the whole population or specific sub-populations of interest.
- Surveillance goes beyond collecting data. It includes production of surveillance products that add value to the data through integration, analysis, interpretation and dissemination.
- Surveillance products must be made available in a timely fashion to health decision makers; and surveillance systems must be able to respond quickly to changes, including new health events.

¹ Adapted from Summary Brochure on the Network for Health Surveillance in Canada. Health Canada, July 1999.

Monitoring is a term that is sometimes used interchangeably with surveillance. In other cases, a distinction is made between the terms, with monitoring usually considered to be a broader activity that includes surveillance. Some feel that the term surveillance has too narrow and technical an interpretation to cover the wide range of activities that will be required in a comprehensive system, and prefer the term monitoring. For example, the U.S., Australia and New Zealand all use the term monitoring to refer to their overall system. However, to remain consistent with the terminology generally in use in Canada at present, the term surveillance is used throughout this document, and is intended to have a broad scope.

2.2 Uses and Users of Surveillance Information

An effective food and nutrition surveillance system must generate timely information to serve multiple uses and users. The following are the main uses. Specific information needs related to these uses, and existing information sources to meet the needs, including significant gaps and limitations in existing sources, are summarized in Section 4 of this document.

Inform the development and measure the outcomes of public policy, including:

- Food and food regulatory policy (e.g. food additives, fortification, labeling)
- Nutritional policy (e.g. policies and guidelines on healthy diets, recommended daily food and nutrient intakes, tolerable upper levels of intakes.)
- Health policy (e.g. prenatal and infant care, chronic disease prevention and care)
- Environmental health policy (e.g. food and water safety, food contamination)
- Agricultural policy (e.g. sustainable food supply, food production and processing)
- Social welfare policy (e.g. income support, food security)
- Economic and trade policy (e.g. food imports, food subsidies)

Support the development, operation and evaluation of programs and services, for example:

- Nutrition education programs and services for various groups
- Child health and child development programs and services e.g. the Canada Prenatal Nutrition Program
- Health promotion programs and services
- Clinical nutrition programs
- Food safety programs and services
- Food regulatory monitoring and enforcement programs
- Food and nutritional risk assessment programs and services
- Food security programs and services for vulnerable groups
- Assessment of adequacy of diets and design of diets to meet nutritional needs of different groups

Service delivery decision-making on resource allocation and accountability

Provide information to advise and educate the public, for example:

- Healthy eating guidelines, e.g. Canada's Food Guide to Healthy Eating
- Health advisories, e.g. about contaminated food and water
- Information to help assess health risks, e.g. from additives, pesticides
- Safe food preparation advice

Provide direction and data for research:

- Identify trends and issues requiring specific research studies
- Assist in setting food and nutrition research priorities and agendas
- Help link research with public policy
- Provide data inputs for research studies

Although all of these uses are critically important, key informants interviewed for this environmental scan were unanimous in emphasizing that the most important use of food and nutrition surveillance information is to inform the development and evaluate the outcomes of public policies. Their view was that evidence-based public policy is the foundation for ensuring the nutritional well-being of Canadians, and that surveillance information must be available to help answer such key questions as:

Do our policies and programs ensure a safe and nutritious food supply?

What is the impact of our policies and programs on the eating patterns, nutritional status and health of the population?

Key informants were also unanimous in stating that Canada does not have the necessary food and nutrition surveillance capacity to properly inform and evaluate public policies and programs. Several noted that many Health Canada and provincial policy initiatives have been seriously hampered by lack of good surveillance information and the lack of information on historical trends. National level information is crucially important because many aspects of food policy and regulation are a federal responsibility. As well, national food and nutrition policy provides the foundation and framework for action by partners at all levels of government and those in the voluntary and private sector.

Users of Surveillance Information. The federal government, provincial/territorial governments, regional and local public health agencies, and non-government health organizations require food and nutrition surveillance information to inform and evaluate their policies and programs, and to educate the public. Food and nutrition researchers need access to data resulting from surveillance activities in order to do their work. The food industry may also use surveillance information to help develop and market their products. Consumer organizations may also use surveillance information to inform and support their activities.

2.3 Key Food and Nutrition Surveillance Questions

To provide information that will serve the uses and users outlined in the previous section, a comprehensive system of food and nutrition surveillance is required. It must include three main data components: data on the food supply, data on the intake of food and nutrients, and data on the nutritional and health status of the population and sub-populations (including physical and biochemical measures). As well, information is needed about factors that influence selection and consumption of foods, and factors that contribute to differential nutritional and health status in different population groups (socioeconomic, environmental, biological and genetic determinants of health). Reference information is also required for interpretation of data collected in food and nutrition surveillance including food composition, dietary guidelines, recommended dietary intakes, reference values for physical and biochemical measures, and food safety standards.

The following are key questions to be answered by a national food and nutrition surveillance system.² Specific types of information required to answer these questions, along with a summary of existing sources of that information and their limitations, are summarized in Section 4 of this document.

The Food Supply

Is the food supply adequate to meet the nutritional needs of the population?

Is the food supply safe to consume?

What are the nutritional and health implications of changes in the composition of the food supply, e.g. due to technological changes in production and processing, fortification, functional foods, food regulations, etc?

Does the accessibility of the food supply (cost, availability, adequacy) enable individuals to consume a diet in accordance with current dietary recommendations, irrespective of geographic location, socioeconomic status, ethnic origin or other key factors?

Intake of Food and Nutrients

What foods do Canadians eat? What nutrients are consumed and in what amounts?

What proportion of the population, and vulnerable sub-populations, consume a diet consistent with current dietary recommendations?

What is the prevalence of nutrient inadequacy or nutrient excess in the population?

Which population sub-groups are at greatest risk of nutrient inadequacy or excess? What factors are associated with nutrient inadequacy or excess?

² These data categories and the associated surveillance questions are adapted from the document *Plan for a national food and nutrition monitoring program* published by the Australian Institute of Health and Welfare in June 1995.

What is the prevalence and duration of breast feeding?

What factors encourage or prevent individuals from adopting current dietary recommendations and eating a healthy diet?

Nutritional and Health Status of the Population

What is the prevalence of underweight, overweight and obesity in the population?

What is the prevalence of specific nutrient deficiencies and excesses in the population, and in vulnerable sub-populations?

What are the population trends in diet-related health conditions and how do these relate to trends in food and nutrient intake?

What is the potential need for and impact of fortification of foods on the nutrient and health status of vulnerable groups?

What are the relationships between nutritional status, health status and key socioeconomic, environmental, biological and genetic determinants of health?

2.4 Requirements for an Effective Surveillance System

Input from key informants, review of existing documents, and discussions of the Working Group indicate the following are essential content, design and operating requirements for an effective national food and nutrition surveillance system for Canada.

- A range of data sources is needed to provide timely, reliable, ongoing information on: food and nutrient intakes; food safety and environmental exposures; nutritional status; nutrition-related health outcomes; knowledge, attitudes and practices about healthy eating and other related lifestyle factors; demographics; personal and environmental health determinants; and factors affecting access to safe, affordable nutritious foods. The capacity to link these different types of data is also necessary.
- The system must include, as its core, an ongoing program of periodic population surveys of a nationally representative sample of all ages that collects consistent information over time. At a minimum, the program must gather data on dietary intake (using rigorous methodologies such as 24 hour recall or food diary); nutrition-related knowledge, attitudes and behaviors; physical (e.g. height, weight) and biological (e.g. from blood sample) measures; and data on socioeconomic and environmental determinants of health. A longitudinal component is highly desirable.
- The surveillance system should ensure the capacity to link data on dietary intakes, biological measures, factors affecting healthy eating, nutritional and health status, health determinants, and health outcomes at the individual level.
- The system should be built by linking and rationalizing/improving existing food and nutrition data sources in innovative ways, and developing new sources to fill gaps.

The food and nutrition system should also be designed to link with other sources of health and health determinants data and demographic data.

- Development and support of the system should involve stakeholders, partners and users. The system must be cost-effective, accountable, and based on the needs of its stakeholders and users.
- The system must provide the capacity to monitor trends and anticipate and respond to emerging information needs, including those of special populations.
- The system, and individual activities and elements within the system, must have clear objectives focused on producing information in a timely way to support policy and program development, and measurement of policy and program outcomes. Priorities and objectives must be set based on the most important policy and program needs for surveillance information.
- The scope of the system, and of individual system elements, must be realistic and feasible. Surveillance activities should not be included unless they can be done effectively.
- A sustained commitment to adequate and ongoing financial, staff and logistical support for the system is essential. Effective surveillance cannot be done through a series of ad hoc, time limited initiatives.
- Sufficient resources must be provided to ensure timely data analysis, and timely production and dissemination of surveillance products. This is essential if the information is to be useful in policy and program decision-making.
- Surveillance information must be effectively communicated to those who need to know. Surveillance results must be analyzed, summarized, interpreted and disseminated in ways that are accessible and useful to decision makers.
- The surveillance system must be designed to offer an optimal interface with research activities. Surveillance information is necessary both to guide research priorities and to conduct research. Research and surveillance are complementary activities which are both essential for evidence-based decision making.
- Surveillance data bases must be publicly available and accessible to those who need to work with the detailed data. Access must be timely and affordable.

3. The Context for Enhanced Food and Nutrition Surveillance

The need to improve Canada's food and nutrition surveillance capacity is being driven by many significant pressures for change. To be successful, action to bring about the required change must recognize and respond to opportunities and challenges in the current environment. The following are the key factors that constitute the context for action.

3.1 Pressures Driving the Need for Better Surveillance

- *Poor nutrition is a key preventable risk factor for the major chronic diseases that take a huge toll in morbidity, disability and premature death in Canada.* Up to date and comprehensive information and trend data on dietary habits and nutritional status, and on the factors that influence dietary choices, is crucial to develop strategies for prevention of cardiovascular disease, diabetes, osteoporosis, cancers, overweight and obesity, and other chronic diseases and health conditions. The annual economic burden of unhealthy eating in Canada has been estimated at \$6.3 billion, including direct health care costs of \$1.8 billion.³
- *Public interest in healthy eating is high, but nutrition-related health problems also remain at high levels.* To make further progress in promoting and supporting healthy eating, ongoing surveillance of dietary intakes, as well as the factors that influence diet, is needed. These factors include nutrition related knowledge, attitudes and behaviors and related lifestyle factors such as physical activity, as well as the economic and social determinants of health.
- *Public concern about food risks and food safety is increasing.* Consumers, advocacy and interest groups expect the government to have up to date, comprehensive information as a basis for public education and advice, and for setting and enforcing food and nutrition policies and regulations. Current high profile issues include food contaminants such as pesticide residues, food additives, and genetically modified foods. There is considerable public fear, confusion and misinformation about these and other food safety issues. To address public concerns and provide information for informed decision making, much better information on public attitudes and concerns, dietary intakes and patterns, nutritional status, and health outcomes is essential.
- *Environmental food contamination is a growing issue.* Information about environmental contaminants in food, combined with information about food intakes, is essential to do risk analysis and to set and defend federal and provincial food policies. The food supply is a more significant source of exposure to environmental contaminants (pesticides, heavy metals, etc.) than the air, yet most attention focuses

³ Cost calculation by Health Canada, Fitness and Active Living Unit using *Economic Burden of Illness in Canada*, 1993 data.

on airborne risks. Environmental contamination of traditional country foods relied upon by Aboriginal peoples is a particular issue requiring better surveillance.

- *Healthy child development is a major policy priority* of the federal and provincial/territorial governments. Ensuring that children get the best possible start in life relies critically on nutritional well-being of the expectant mother and of the child throughout their developmental years. Better nutritional surveillance of children is required to support this policy priority. In Canada, we have almost no national information on food intakes and nutritional status of children, and the extent and nature of nutritional problems that may exist. Information on food insecurity affecting children is also extremely inadequate.
- *Aboriginal peoples experience a high incidence of nutrition-related health problems.* Certain groups are facing dramatic increases in some nutrition related conditions, particularly diabetes and obesity. Improving health outcomes for aboriginal peoples is one of Canada's highest public health priorities. Better surveillance of dietary intakes, nutritional status, nutrition-related knowledge, attitudes and behaviors, and health outcomes is essential to address this priority.
- *Maintaining good nutritional status for seniors* is essential to maintain quality of life, reduce the impact of chronic diseases and avoid premature loss of independence. There is little information on the dietary status of seniors and little understanding of seniors' unique nutritional needs.
- *The food supply is changing rapidly* due to new technologies in plant and animal breeding, crop disease and pest control, changing production and processing methods, trade agreements that increase the free flow of food between countries, and changing consumer demand. Up to date, timely surveillance information is required to ensure that food policy and regulations respond effectively to protect and promote human health in the face of these changes.
- *Food consumption patterns are changing.* The growing ethnic diversity in Canada's population, and rapid changes in the production and marketing of food, are bringing about significant changes in food consumption patterns. Increasing time pressures on families and lack of food preparation skills are increasing the consumption of prepared foods and restaurant meals. Through practices such as promotion of large serving sizes and aggressive marketing of prepared and convenience foods, the food sector influences food choices and eating patterns. As well, changes in consumption patterns are likely as the population ages. Policies and programs to support healthy eating and nutritional well-being require an ongoing and timely capacity to monitor changing consumption patterns, nutritional status and reasons for food choices. This information must be adequate to understand changes in the general population as well as in particular age groups, in sub-populations with different dietary practices (e.g. new immigrants, vegetarians, Aboriginal peoples who are shifting from a traditional diet of country foods to a western diet) and in sub-populations vulnerable to food insecurity and nutritional inadequacy.

- *Access to food and related food insecurity issues are growing concerns.* Disparities in nutritional well-being experienced by vulnerable and marginalized groups are most often related to poverty and compromised food access combined with other social and economic barriers. Some people with low incomes are unable to obtain the food they need for nutritional well-being without jeopardizing other basic needs. The use of food banks continues to rise in Canada. Geographic isolation also affects food access by making food, especially perishable items, expensive and sometimes difficult or impossible to obtain, regardless of cost. Information is needed to better understand the nature and magnitude of these issues, and to develop strategies to address them effectively.
- *Interest in and use of dietary supplements, nutraceuticals and functional foods is increasing.* Dietary supplements include vitamins and minerals. Functional foods are foods that have demonstrated physiological benefits beyond their basic function of providing energy and nutrients. Nutraceuticals are products, isolated or purified from foods, that have physiological benefits or protect against disease, usually used as a medicinal agent. Information about use of these products, reasons for using them, and the impact on nutritional and health status is critical as a basis for public education, assessment of health claims, labeling requirements, and development of policies to help ensure their safe and appropriate use.

3.2 Opportunities, Linkages and Facilitating Factors

- *New information technologies and new biotechnologies* are enabling dramatic advances in what will be possible in nutritional and health surveillance. New information technologies enable more efficient and extensive data collection and processing, and a capacity to link data sources, that were unheard of only a few years ago. New biotechnologies increasingly allow measurement and linking of biological and genetic markers and environmental exposures, including exposures in food. These new approaches make possible wide prospective surveys covering medical history, dietary intake, chemical exposures, and biological markers – with the capacity to link diet and environmental exposures, genetic risk, disease markers, and disease/health outcomes.
- *Improved health information is currently a priority* of federal and provincial/territorial governments, to enable more effective evidence-based health system decision making. Significant investments are being made in health information and infrastructure. Improving Canada’s health surveillance capacity is a key part of this. Nutritional well-being and a safe nutritious food supply are central to all aspects of the health system – prevention, health promotion, health protection and health care. Improved food and nutrition surveillance should therefore receive a significant focus in ongoing health information initiatives.
- The *Roadmap Initiative* is a collaborative health information effort between the Canadian Institute for Health Information (CIHI), Statistics Canada, Health Canada,

and many other groups at all levels – national, regional and local. A key priority is better tracking of information on major current and emerging health issues. Particular attention is being paid to accessing and linking existing information networks and infrastructures. This provides an opportunity to strengthen food and nutrition surveillance, and build the capacity for future linking of food and nutrition information with other health data bases such as chronic disease (e.g. cardiovascular disease, cancer, diabetes) surveillance data.

- The new *Canadian Community Health Survey* (CCHS) being developed by Statistics Canada, CIHI and Health Canada will include only limited core questions on fruit and vegetable consumption in the first cycle (year 2000), as well as an optional physical examination module. However, there is a significant opportunity for addition of a more extensive module on food and nutrition in future cycles. The focus of the CCHS is on information needed at the local and regional level, which can be aggregated to the provincial and national level.
- *The FPT Advisory Committee on Health Infrastructure*, reporting to the FPT Conference of Deputy Ministers of Health, has been established to recommend priorities and coordinate initiatives of the two levels of government. It has a Health Surveillance Working Group which could advocate for enhanced food and nutrition surveillance as a crucial part of Canada's overall health information capacity.
- The *Network for Health Surveillance in Canada*, an initiative of Health Canada's Office for Health Surveillance, is directed by the FPT Health Surveillance Working Group. It aims to build capacity at the local/regional, provincial/territorial and national levels to acquire and share health surveillance information. The initial focus is communicable disease control, although the intent is to broaden the scope over time. The Network will provide a forum for health professionals to develop model agreements on protocols and data access, inventories of databases, new tools for data access and analysis, and advice on establishment of new surveillance systems. The Network could provide advice and linkages during development of an improved food and nutrition surveillance system.
- *The FPT Advisory Committee on Population Health* has two major initiatives that relate to food and nutrition surveillance. The Public Health Working Group's Infrastructure Project is addressing the capacity of the public health system to deal with current and emerging issues, which includes surveillance capacity. Population level nutritional status and links between diet and health are key concerns for public health, so must be part of an effective surveillance capacity. The Working Group on Strategic Directions and Indicators is finalizing a set of national strategic directions for population health that will serve as a framework for development of indicators and (in collaboration with CIHI) that provincial and federal governments will monitor. A national food and nutrition surveillance capacity is essential if nutrition indicators are to be included .

- *Several new initiatives within Health Canada* have implications for, or potential linkages with, food and nutrition surveillance. Examples are the Diabetes Prevention and Control Initiative; various initiatives to improve the food safety and nutrition capacity of the Department; development of a nutrition labeling policy; and review of policies concerning addition of vitamins and minerals to foods. These initiatives may provide opportunities to strengthen existing food and nutrition surveillance activities, obtain resources for new activities needed to fill gaps, and build linkages with related surveillance systems (e.g. diabetes surveillance).
- *Food and nutrition surveillance is becoming an international priority.* This provides opportunities for collaboration with other countries on surveillance initiatives. For example, the United States is willing to share, at no cost, the knowledge and technologies it has developed as part of its very comprehensive and sophisticated food and nutrition monitoring system. There are also growing opportunities for internationally linked surveillance data bases.

3.3 Challenges

- *Development of an effective national food and nutrition surveillance capacity will be costly and complex.* For example, the system must include some way of obtaining nationally representative data on the population of all ages and sub-populations of interest. Cost and complexity seem to have been the key factors in the lack of a national survey since 1972. The provincial nutrition surveys conducted from 1990-1999 (described in Section 4) were a collaborative federal/provincial attempt to obtain data that could be aggregated to provide national level data. However, serious problems with the timing of the surveys (data collection spread over 10 years, with a likely span of 12 or more years before reports for all provinces are available) have severely hindered the effectiveness of the approach. A feasible approach to obtaining the needed national level data must be found. Most other developed countries have made the substantial investment needed for comprehensive national surveys, and have found the results to be well worth the expense (see Section 5 on International Comparisons).
- *Deciding on the appropriate scope of a national nutrition surveillance system will be difficult.* For example, there will be pressures to make a national survey extremely extensive and as state-of-the-art as possible, to meet the needs of a wide range of users and stakeholders. This could put the cost out of reach. Distinguishing between what data must be obtained on a regular basis to inform public policy priorities and measure outcomes, and what may be needed (or would be nice) as the basis for prospective research studies, will be a challenge. It will never be possible to meet all needs. So a way must be found to set clear goals and obtain consensus from key players and users about objectives that are feasible and affordable.
- *Taking advantage of new technologies and focusing in innovative ways on future needs will require deliberate efforts,* but is essential. The tendency will be to answer

the questions of the past, not the future, and to be limited by the methodologies people are most familiar with. The challenge will be to balance current needs and proven methods with future needs, new technologies and new approaches – in the most appropriate and cost-effective way possible.

- *Development of a national food and nutrition surveillance system will inevitably be a collaborative effort*, given the respective responsibilities and capacities of federal and provincial/territorial partners in Canada's health system, and the federal commitment to collaboration with government and non-government partners. Successful collaboration is difficult. It requires effective leadership, time, and a major resource and motivational commitment from all partners. An excellent process for initiating and managing collaboration will be required to achieve timely results.
- *The potential reluctance of partners due to problems encountered in the provincial nutrition surveys will have to be overcome*. As well, there have been numerous efforts over the years to improve Canada's national food and nutrition surveillance capacity, all of them unsuccessful (major initiatives are listed in Appendix B). It is essential to understand and overcome the reasons for this continuing lack of progress and success.
- *Canada's overall surveillance capacity must include Aboriginal peoples while recognizing their unique needs and interests*, particularly around issues of community involvement and ownership and control of data. This will require different approaches than those normally used for general population surveillance, while ensuring comparability of Aboriginal and general population data. There are models to build upon. Examples are the methodologies developed by the Centre for Indigenous People's Nutrition and Environment for their surveys in the Arctic, and the approach taken for the First Nations and Inuit Regional Health Survey.
- *Appropriate ways to involve the food industry need to be found*. The food industry has a major interest in food and nutrition surveillance, both to assist with development and marketing of their products, and to demonstrate an interest, as good corporate citizens, in healthy eating and population health. For example, in the absence of up-to-date national surveillance data, the Beef Information Centre sponsored a small national nutrition survey in 1998, in cooperation with other industry partners and Agriculture Canada (conducted by McGill University), to obtain information on dietary intakes and consumption patterns. The data will be accessible and useful to industry and public organizations. Yet the public, and many health professionals, are cautious (and sometimes extremely negative) about industry involvement in food and nutrition surveillance. There is a suspicion that industry funding of surveillance initiatives introduces a bias into what is investigated, and potentially into the results. Yet the food industry is a major stakeholder, and potentially can be an effective partner. The challenge is to develop partnership approaches that will overcome these concerns.

4. Overview of Food and Nutrition Surveillance In Canada

This section of the Environmental Scan provides an overview of past and current data sources for food and nutrition surveillance, links these to key surveillance questions and information needs, describes initiatives specifically focused on Aboriginal peoples, and discusses the very significant gaps and limitations in Canada's current data sources and surveillance capacity.

4.1 Existing National Food and Nutrition Surveillance Initiatives

Canada has never had a formal, systematic program of national food and nutrition surveillance. At the 1992 International Conference on Nutrition, Canada, along with other participants, made a commitment to develop a national plan of action for nutrition. In response, other countries, notably Australia and New Zealand, developed and implemented national plans that included national nutrition monitoring systems and national nutrition surveys. In 1996, Canada produced *Nutrition for Health: An Agenda for Action*, a national strategy developed through multisectoral collaboration. This Agenda for Action was endorsed by the Ministers of Health Canada and Agriculture and Agri-Food Canada. It includes a strategic direction to support nutrition research, with a key action being development of a national data base on relevant indicators affecting nutritional health including nutritional status, food practices, and related social, economic, cultural and educational data. Surveillance activities are critical to development of such a data base. But to date, little has been done to put the necessary surveillance system in place.

Canada's first and only comprehensive national nutrition survey was the *Nutrition Canada Survey* conducted in 1970-72. Although this was intended to be a longitudinal survey, it has never been repeated. Since Nutrition Canada, there have been various surveys and other initiatives that provide data to meet some national nutrition surveillance information needs. These are summarized in the table on the following pages. The table arrays the data sources according to the key surveillance questions and information needs they address, and identifies gaps and limitations in the data sources.

Following the table, Section 4.2 provides a brief description of the main data sources and the sponsoring organization. Only data sources with a national scope are included. Surveillance initiatives focused specifically on Aboriginal peoples are then described in Section 4.3. An analysis of the very significant gaps and limitations in existing data sources, which expands on the points in the table and includes unique issues for Aboriginal peoples, is presented in Section 4.4.

KEY SURVEILLANCE QUESTIONS RE: THE FOOD SUPPLY	INFORMATION USES	INFORMATION NEEDS	EXISTING NATIONAL DATA SOURCES	LIMITATIONS/COMMENTS
<i>Is the food supply adequate to meet the nutritional needs of the population?</i>	<ul style="list-style-type: none"> • Food and agricultural policy • Health policy and programs 	<ul style="list-style-type: none"> • Amounts and types of food available for consumption • Nutrient composition of available foods • Size and composition of the population • Recommendations for dietary and nutrient intake 	<ul style="list-style-type: none"> • Food Consumption in Canada • Canadian Nutrient File • Canada’s Guidelines for Healthy Eating • Recommended Nutrient Intakes 	
<i>Is the food supply safe to consume?</i>	<ul style="list-style-type: none"> • Public health policy, programs and services • Regulatory policy governing food production and processing 	<ul style="list-style-type: none"> • Chemical and microbiological contaminants in food and water • Other potential health risks, e.g. genetically modified foods • Food intake of the population 	<ul style="list-style-type: none"> • Total Diet Studies • Canadian Food Inspection Agency surveillance of various food commodities for safety, including contaminants • Some federal pesticide residue monitoring • See below for data sources re: food intake 	<ul style="list-style-type: none"> • No systematic, comprehensive national surveillance of environmental exposures, food contaminants and risks • See below for information gaps re: food intakes
<i>What are the nutritional and health implications of changes in the composition of the food supply, e.g. changes in production and processing, fortification, functional foods, food regulations?</i>	<ul style="list-style-type: none"> • Regulatory policy governing food and food products • Health policy, programs and services • Social welfare policy, programs and services 	<ul style="list-style-type: none"> • Data on key technological and regulatory influences and changes • Food intake and nutritional status of the population and vulnerable groups • Health status of the population and vulnerable groups 	<ul style="list-style-type: none"> • Various ad hoc federal activities to monitor food-related technological and regulatory change • See below for data sources re: food intake and nutritional and health status 	<ul style="list-style-type: none"> • No systematic monitoring of food related technological and regulatory changes • See below for information gaps re: food intake and nutritional and health status
<i>Does the accessibility of the food supply (cost, availability, adequacy) enable individuals to</i>	<ul style="list-style-type: none"> • Social and economic policy and programs • Food and nutrition policy 	<ul style="list-style-type: none"> • Cost of foods at local level • Availability and adequacy of food supply at local level 	<ul style="list-style-type: none"> • Food Expenditure Survey • Survey of Family Expenditures 	<ul style="list-style-type: none"> • Almost no systematic or comprehensive national information on food accessibility • Agriculture and Agri-Food Canada

<i>consume a diet in accordance with current dietary recommendations?</i>	and programs	<ul style="list-style-type: none"> • Household food expenditures • Individual and household income 		National Nutritious Food Basket discontinued in 1995
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KEY QUESTIONS RE: INTAKE OF FOOD AND NUTRIENTS	INFORMATION USES	INFORMATION NEEDS	EXISTING DATA SOURCES	LIMITATIONS/COMMENTS
<p><i>What foods do Canadians eat? What nutrients are consumed and in what amounts?</i></p> <p><i>What proportion of the population and vulnerable sub-populations consume a diet consistent with current dietary recommendations?</i></p> <p><i>What is the prevalence of nutrient inadequacy or excess in the population?</i></p> <p><i>Which population sub-groups are at greatest risk of nutrient inadequacy or excess?</i></p>	<ul style="list-style-type: none"> • Food and nutrition policies, programs and services • Health policy and services • Social and economic policy 	<ul style="list-style-type: none"> • Food and nutrient intake (dietary and supplement form) of population, all ages • Food and nutrient intake (dietary and supplement form) of sub-populations with different dietary habits, and vulnerable sub-populations • Source of foods consumed • National dietary guidelines and recommendations • Recommendations for nutrient requirements 	<ul style="list-style-type: none"> • Nutrition Canada Survey • Apparent per capita intake calculated from Family Food Expenditure Survey data by Agriculture & Agri-Food Canada (AAFC) • Provincial Nutrition Surveys • Food Habits of Canadians Survey 	<ul style="list-style-type: none"> • Nutrition Canada data 3 decades out of date. • No commitment to regular gathering of information over time. • Little consistency across sources or over time in information from past activities. Children, seniors and aboriginal populations excluded. • No recent national physical measures or data on biomarkers • Provincial nutrition surveys spread over 10 years, methodologies not completely consistent. Children, seniors, aboriginal and other vulnerable populations excluded. • Sample size in recent Food Habits of Canadians survey too small for regional and local application.
<p><i>What is the prevalence and duration of breast feeding?</i></p>	<ul style="list-style-type: none"> • Child health policy, programs and services • Food and nutrition policy • Social and economic policy 	<ul style="list-style-type: none"> • Prevalence and duration of breast feeding for general population and vulnerable groups 	<ul style="list-style-type: none"> • Canada’s Health Promotion Survey • National Population Health Survey (NPHS), Nutrition Supplements • National Longitudinal Survey of Children and Youth (NLSCY) 	<ul style="list-style-type: none"> • Poor consistency across sources and over time in information from past activities • NLSCY includes only breast feeding data, no other nutritional information
<p><i>What factors encourage or hinder individuals in adopting current dietary recommendations and eating a healthy diet?</i></p>	<ul style="list-style-type: none"> • Development, targeting and evaluation of health promotion policies, programs and services • Development, targeting and evaluation of specific nutrition and nutrition 	<ul style="list-style-type: none"> • Nutrition related knowledge, attitudes, skills and behaviors • Food acquisition, storage and preparation facilities and practices • Household food insecurity and determinants of food insecurity 	<ul style="list-style-type: none"> • Canada’s Health Promotion Survey • National Population Health Survey, Nutrition Supplements • Provincial Heart Health Surveys • Provincial Nutrition Surveys • Canada Fitness Survey • Campbell’s Survey on Wellbeing in 	<ul style="list-style-type: none"> • No commitment to regular gathering of consistent information over time. • Nutrition not a core part of NPHS. Questions on NPHS nutrition supplements not consistent over time. Some nutrition questions will be included in future CCHS.

	<p>education policies and programs</p> <ul style="list-style-type: none"> • Social and economic policy 	<ul style="list-style-type: none"> • Socially and culturally determined food habits and preferences 	<p>Canada</p> <ul style="list-style-type: none"> • Tracking Nutrition Trends • Canadian Community Health Survey (CCHS) • Ad hoc analysis of food bank and poverty statistics to define population at risk for food insecurity 	<ul style="list-style-type: none"> • Little coFinansistency across sources or over time in different surveys. • Virtually no national information on food insecurity • Discontinuation of AAFC Nutritious Food Basket hinders food insecurity surveillance
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KEY QUESTIONS RE: NUTRITIONAL AND HEALTH STATUS	INFORMATION USES	INFORMATION NEEDS	EXISTING DATA SOURCES	LIMITATIONS/COMMENTS
<i>What is the prevalence of underweight, overweight and obesity in the population?</i>	<ul style="list-style-type: none"> • Development and evaluation of health promotion and nutrition policies and programs • Provision of health services 	<ul style="list-style-type: none"> • Weight and height for population and vulnerable sub-populations • Longitudinal weight and height data for children, to track development 	<ul style="list-style-type: none"> • Nutrition Canada Survey (NCS) • Canada Health Survey (CHS) • Canada Fitness Survey (CFS) • Provincial Heart Health Surveys • Provincial Nutrition Surveys • National Population Health Survey • National Longitudinal Survey of Children and Youth • Food Habits of Canadians Survey (FHCS) 	<ul style="list-style-type: none"> • NCS, CHS, CFS, provincial heart health surveys and provincial nutrition surveys collected anthropometric measures • NPHS, NLSCY and FHCS use self-reported height and weight, with associated biases • Need for much stronger national capacity for physical measures and biomarkers.
<p><i>What is the prevalence of specific nutrient deficiencies and excesses in the population, and in vulnerable sub-populations?</i></p> <p><i>What are the population trends in diet-related health conditions and how do these relate to trends in food and nutrient intake?</i></p> <p><i>What is the potential need for and</i></p>	<ul style="list-style-type: none"> • Food and nutrition policies and programs • Health policy and services • Regulatory policy governing food and food products 	<ul style="list-style-type: none"> • Nutritional status (from dietary intake and biological measures) of the population and sub-populations at greatest risk of inadequacy/excess • Health outcomes for conditions whose occurrence and severity is related to diet and nutrient status • Capacity to link nutritional 	<p>Nutritional Status:</p> <ul style="list-style-type: none"> • Nutrition Canada Survey • Canada Health Survey • Provincial Heart Health Surveys • Provincial Nutrition Surveys • Food Habits of Canadians Survey <p>Health Status:</p> <ul style="list-style-type: none"> • Chronic disease mortality and morbidity data bases 	<ul style="list-style-type: none"> • All the same limitations of data on food and dietary intake apply • Biological measures not gathered on most surveys • Nutrients from supplements not included on existing nutrition surveys • Virtually no capacity to link

<p><i>impact of fortification of foods on the nutrient and health status of vulnerable groups?</i></p>		<p>status with health status data</p>	<ul style="list-style-type: none"> • Canada Health Survey • National Population Health Survey • Canadian Community Health Survey (CCHS) 	<p>nutritional status and health status data at the individual level, and very limited capacity at the population or sub-population level</p>
<p><i>What are the relationships between nutritional status, health status and key socioeconomic, environmental, biological and genetic determinants of health?</i></p>	<ul style="list-style-type: none"> • Social, economic, environmental and health policies and services 	<ul style="list-style-type: none"> • Data on basic demographics, income, employment, education, social supports, physical environment, lifestyle, biological and genetic characteristics and health care utilization • Capacity to link nutritional status, health status, and health determinants data 	<ul style="list-style-type: none"> • Basic demographic data are gathered on virtually all surveys <p>Determinants of health data:</p> <ul style="list-style-type: none"> • National Population Health Survey • Canadian Community Health Survey 	<ul style="list-style-type: none"> • No common agreement on determinants of health data to be collected, to ensure consistency. • Extremely limited capacity in existing activities to link nutritional status, health status and determinants data at the individual or population level.

4.2 Description of Data Sources ⁴

The following are brief descriptions of the main data sources listed in the preceding table. Although some are very out-of-date and have serious limitations, most are being used to some extent in the absence of more current data. Some have a very minimal nutrition component, but have been included to provide a complete picture. The chronic disease data bases are included because in future they could be linked with nutrition surveillance data sources.

Nutrition Canada Survey. Health and Welfare Canada. Data collected in 1970-72.

Canada's first, and at this point only, comprehensive national nutrition survey. Report published in 1976. Was intended to be longitudinal. Sampled all age groups in all provinces. Included Indians and Eskimos, although they were under-sampled. Infants and children also under-sampled. Included dietary, nutritional, clinical, anthropometric, dental and biochemical measurements. Information is grossly out dated, although it is still being used in the absence of newer information.

Canada Health Survey. Statistics Canada. Data collected in 1978/79. Cross-sectional.

Household sample, data gathered on all household residents, all provinces. Limited diet and nutrition component, no consumption data. Measured and weighed all people 2 years of age and older. Included measures of percent body fat and biochemical markers (uric acid, cholesterol, glucose).

Canada Fitness Survey. Health and Welfare Canada. Data collected in 1981. Sampled population 7 years of age and older in all provinces. Cross-sectional. Main focus was physical activity. Included limited nutrition information (breakfast habits, change in consumption of certain food groups in past year, knowledge of healthy diet behaviors, alcohol use). Measured height and weight.

Campbell's Survey on Well-Being in Canada. Canadian Fitness & Lifestyle Research Institute. Data collected in 1988. Was a follow-up of the 1981 Canada Fitness Survey. Sampled population 7 years and over in all provinces. Cross-sectional. Included large dietary component (no detailed assessment of dietary intake), measured height and weight.

Canada's Health Promotion Survey. Health and Welfare Canada. Data collected in 1985 and 1990. Longitudinal. Sampled population 15 years of age and older in all provinces. Nutrition was a major component of the 1985 survey, but no detailed measurement of dietary intake. Only consistent nutrition questions to identify trends from 1985 to 1990 were alcohol consumption, self-reported height, weight and ideal weight. Replaced in 1994 by National Population Health Survey.

⁴ Information about past and current data sources presented in this section draws extensively from an unpublished Health Canada document authored by Elaine Jones-MacLean titled *Surveys on Nutritional/Dietary Data of Canadians*.

Provincial Heart Health Surveys. Health Canada and provincial health ministries. Data collected between 1986 and 1992 by provincial governments, analyzed and aggregated into a national data base by Health Canada. Sampled adult population age 18-74 years in all provinces. Included extensive component on healthy eating knowledge, attitudes and behaviors, anthropometric measures, blood pressure, blood sample for serum cholesterol and lipoproteins.

Provincial Nutrition Surveys. Health Canada and provincial health ministries. Data collected between 1990 and 1999 (Nova Scotia and Quebec in 1990, Saskatchewan 1993/94, Alberta 1994, PEI 1995, Newfoundland 1996, New Brunswick 1997, Ontario 1997/98, Manitoba 1998/99, BC 1999). Data collected by provincial government, data entry and analysis done by Health Canada, report prepared by province. Reports completed for Nova Scotia and Quebec. Saskatchewan working on report. Data entry and analysis still in process for all others except BC, which is still collecting data. Sampled adult population 18-74 years of age (18-84 years in BC). Cross-sectional. Measures dietary and nutrient intakes (24 hour recall), nutrition related knowledge, attitudes and behaviors, height and weight. Core content with option for provincial add-ons.

Tracking Nutrition Trends Survey. National Institute of Nutrition. Data collection cycles completed in 1989, 1994, 1997. Cross-sectional. Funded by industry partners, Health Canada and Agriculture and Agri-Food Canada. Sampled adults age 18 years and older in 5 regions (BC, Prairies, Ontario, Quebec, Atlantic). Focuses on nutrition and healthy eating knowledge, attitudes and reported behavior. No data on dietary intake or nutritional or health status. Same core questions used in all 3 cycles, so provides capacity to track trends. Latest report highlights major changes over time.

National Population Health Survey. Statistics Canada. Ongoing every 2 years. Data gathering cycles completed for 1994/95, 1996/97, 1998/99. Longitudinal and cross-sectional. Samples all provinces. Household sample, data gathered for all members of household. No nutrition questions in core survey. Includes self-reported height and weight. Supplement on nutrition in 94/95 and 98/99, but no detailed dietary intake measurement. Nutrition questions not consistent in 94/95 and 98/99 cycles. Core includes limited questions on food insecurity, and 98/99 cycle included a supplement on food insecurity.

Canadian Community Health Survey. Statistics Canada. First data collection cycle will be in 2000. Cross-sectional. Replaces cross-sectional component of National Population Health Survey. Focus is on information useful at regional and local level, although also will give national picture. Core content for first cycle will include limited nutrition questions, and an optional nutrition component is planned for the future. Optional component may include anthropometric and biological measures.

National Longitudinal Survey of Children and Youth. Statistics Canada. First cycle in 1994. Ongoing every 2 years to coincide with National Population Health Survey.

Longitudinal. Only nutrition information collected is whether mother breast fed child, prenatal alcohol use, birthweight and height of child, child hunger and alcohol use in older children. Potential for nutrition supplements in future.

Food Habits of Canadians Survey Beef Information Centre. Data collected in 1997-98. Funded by industry partners and Agriculture & Agri-Food Canada, conducted by McGill University. National sample of adults 18-65 years. Small sample size limits inter-regional comparisons. Measured dietary intake, nutritional status, perceived health status, self reported height and weight.

National Chronic Disease Data Bases. The Laboratory Centre for Disease Control of Health Canada maintains data bases on Cardiovascular Disease and Cancer that include mortality and hospital separations data. The National Diabetes Surveillance System which is under development will eventually result in a data base, and will serve as a model to enhance cardiovascular disease and other chronic disease surveillance. LCDC is now planning to develop a chronic disease surveillance approach. At some point in the future, it should be possible to link these chronic disease surveillance initiatives with nutrition surveillance data.

Survey of Family Expenditures and Food Expenditure Survey. Statistics Canada. Total household purchase of foods from stores and restaurants. Cross-sectional. Family Expenditures Survey is biennial, Food Expenditure Survey Supplement done every 4 years. Samples urban and rural households in 10 provinces, Whitehorse and Yellowknife. Data is used by Agriculture and Agri-Food Canada to calculate estimated per capita intake of nutrients. Includes all food purchased, including food not consumed for various reasons, so is only a gross estimate.

Food Consumption in Canada. Statistics Canada. Food available for consumption is calculated annually from food supply data (production, imports, beginning stocks) and disposition data (exports, loss factors, ending stocks). Indicates the total amount of basic raw foods (e.g. wheat, meat carcasses) available for consumption. Provides a very gross estimate, but is useful for tracking changes in available food and nutrient supply.

Canadian Nutrient File. Health Canada. Data base of nutrient composition of foods. Is being expanded and updated in conjunction with data analysis for the provincial nutrition surveys. Used to calculate nutrient intakes from food intake data.

Nutritious Food Basket Studies. Agriculture and Agri-Food Canada. Discontinued in 1995. Calculated the cost of a basket of nutritious foods (standard basket and thrifty basket) consistent with dietary guidelines, costed using the Statistics Canada Consumer Price Index. In 1998, Health Canada coordinated development of a new National Nutritious Food Basket (NNFB) Template based on current dietary guidelines and food consumption patterns. There is no national system to obtain data, although some provinces are using the NNFB template to develop their own data collection system. The market basket measure of poverty being developed by Human Resources Development Canada with the provinces will use the NNFB

Template for the food component. Data collection will begin in 2000 in 19 communities across Canada.

Total Diet Studies. Health Canada. Regular studies to estimate the background exposure of Canadian infants, children and adults to toxic chemicals and nutrients. Foods collected from specific locations (major cities have been used in the past) are prepared as if for consumption, followed by analysis for toxic chemicals and estimation of dietary intakes of the chemicals by different age/sex groups. Some nutrients are also analyzed. Used for scientific risk assessments and for taking appropriate risk management actions.

4.3 Surveillance Initiatives for Aboriginal Populations

Centre for Indigenous People's Nutrition and Environment (CINE). McGill University. Since 1993 CINE has surveyed 45 arctic communities. Surveys covered food intake, food habits, calculated contaminants intake, social and cultural aspects of food system, no biological measures. Sample size approximately 3,500. Did not formally sample within communities, sample of 45 communities carefully selected from 120 communities, to cover inter-community variability. Methodology involves intensive involvement with entire community. Is expensive and time consuming, but participation rate (90%), data quality and utility are excellent. Cycle is 4 years from first contact to dissemination of report. CINE works simultaneously with 10 to 20 communities in a region within a cycle.

First Nations Health Information System. Medical Services Branch of Health Canada and Ontario First Nations. In early stages of implementation. Contains information about Status and non-Status Indians who access services on reserve and/or at MSB health facilities off-reserve. Data is contained in secure individual patient records that can be aggregated to provide non-nominal data. Data includes information on reportable and chronic diseases, mortality, maternal health and environmental health. No information on nutritional intake or status. Information to be used for improved case management, program planning and health surveillance.

Aboriginal Peoples Survey. Statistics Canada. Ongoing data collection, beginning in 1995, on social and economic conditions of Aboriginal people including information on housing conditions, health, employment history, schooling, and mobility. No specific information on nutrition.

First Nations and Inuit Regional Health Survey. FNIRHS National Steering Committee. Funded by Health Canada. Data gathered in 1997, report published in 1999. National core survey with regional add-ons. No focus on nutrition in core survey, although more emphasis in individual regional surveys. Included on-reserve and Labrador Inuit, no off-reserve component, no Inuit outside Labrador. Communities validate the data, have a responsibility to use it. The approach fits with community level expectations. Links with Statistics Canada Aboriginal People's Survey. Intended to be longitudinal every 4 years, funding not committed for next cycle.

Nutrition has been given medium priority for next cycle in 2001, which will also include height and weight measures.

National First Nations Environmental Contaminants Program. Medical Services Branch of Health Canada. On-reserve risk assessment, dietary surveys and epidemiological studies to evaluate effects of environmental contaminants such as POPs, heavy metals and biological contaminants in the food supply.

Northern Air Stage Program (Food Mail Subsidy Program) Nutrition Surveys.

Department of Indian Affairs and Northern Development. Surveys conducted in 1992 and 1997 in Repulse Bay and Pond Inlet as part of an ongoing assessment of the impact of, and possible alternatives to, the Food Mail Program (designed to make food more affordable by subsidizing cost of transporting food). Surveys collected information on food intake (24 hour recall and food frequency measure to assess seasonal use of foods), height and weight, self reported health status, health related knowledge and attitudes, affordability of food, and demographics.

Dietary Survey of Pre-School Children, Women of Child Bearing Age, and Older Adults in God's River, Nelson House and South Indian Lake. University of Manitoba.

Funded by MSB. Data collected 1990-91 on food intake, seasonal use of food, food preferences, food availability, factors affecting access to and consumption of food, food prices and affordability.

4.4 Gaps and Limitations in Existing National Surveillance Capacity

Although the preceding list of national data sources seems quite extensive, there are very significant gaps and limitations that make the available data marginally useful for policy and program development, for evaluation of the outcomes of public policies and programs, and for research and other key purposes.

Most key informants interviewed for this environmental scan were emphatic that the gaps in Canada's food and nutrition surveillance capacity are extremely serious and must be remedied to protect and promote the public health. All agreed that a systematic approach that improves and links existing data sources, and develops new data sources to fill the gaps, is urgently needed to address the following problems.

- There is no commitment to regular gathering of consistent national data on food intake and nutritional status. No such national data have been collected since the 1972 Nutrition Canada Survey, and those data are badly out of date because there have been major changes in the food supply and in dietary patterns in the last 30 years. The only regularly available national consumption information is derived from food expenditures, which provides only a gross estimate not suitable for understanding the nutritional state of the population, for identifying groups at nutritional risk, or for risk assessment of food contaminants.

- Physical measures and biomarkers of nutritional status, environmental exposures, health outcomes and their links are unavailable. Physical and biological measures have not been collected nationally since the 1972 Nutrition Canada Survey. There are no biological data that would allow linking of genetic characteristics, nutritional status and health outcomes.
- Recently, apart from the provincial nutrition surveys, nutrition survey activities funded by Health Canada have mostly been part of federally funded research projects conducted by universities. They have been geographically restricted, and the focus has been on special populations such as people with low income, the elderly, or Indians on reserves. Results are presented in reports which are not widely accessible as a national resource.
- As yet, the data from the provincial nutrition surveys cannot be aggregated to provide a national picture of food intake and nutrient status because results for all provinces are not available. Even when all data become available, the picture won't be truly national because the Territories aren't included. Children and older Canadians are not included. As well, the validity and usefulness of the aggregated data will be questionable, because by being spread over 10 years, temporal and regional differences will be confounded.
- There is virtually no information on food intake and nutrient status of children or seniors. Neither group was included in the provincial nutrition surveys (except BC which included seniors). Quebec is now conducting a survey of children, using methodologies that were developed jointly with Health Canada which could be used in other surveys.
- Quite extensive data on nutrition related knowledge, attitudes and behaviors (KAB) have been collected fairly regularly in various surveys. For example, the Tracking Nutrition Trends surveys provide trend data over a 10 year period. However, the ability to look at time trends over longer periods is hindered by the lack of consistency in the topics covered and the way the questions are asked on different surveys. There are also problems with consistency of the KAB information on the different provincial nutrition surveys. For the most part, existing national data sources do not allow linking of KAB information with other information such as dietary intakes, nutritional status, health status and health determinants.
- There is no systematic, comprehensive national surveillance and linking of food intakes, environmental exposures, and food contaminants/risks.
- Data sources cannot be linked to understand the relationships between dietary intakes, nutritional status, environmental exposures, nutrition related KAB, health status and health determinants.
- There is virtually no national information to better understand the extent, impacts and solutions to compromised food access and food insecurity. Food bank utilization is

used as an extremely unsatisfactory proxy. Information on income at the national level is available, but huge assumptions and inferences must be made about food intake, food costs and nutritional status. Information is needed to make the links between income, food access, consumption, nutritional status and health status.

Unique Issues and Considerations for Aboriginal Populations

As well as the gaps and limitations outlined above, there are some unique considerations and issues with respect to surveillance initiatives for Aboriginal populations.

- There is no consistent information on food intakes, diet-related KAB, nutritional status, food supply, food security or nutrition related health status for aboriginal peoples, and no useful historical trend data. This applies to both on-reserve and off-reserve Aboriginal populations. There are small studies, but these do not provide information needed to anticipate and respond to nutrition related health trends and their consequences.
- It is essential to understand and take into account cultural practices and food preferences, traditional diets, and community characteristics and priorities, when designing and conducting surveillance initiatives. For example, biological samples can be a sensitive issue. Aboriginal peoples must be extensively involved at all stages.
- The design of surveys must take into account the ability to compare the Aboriginal population to the larger population, as well as the ability to draw conclusions about Aboriginal sub-populations and do comparisons among different Aboriginal groups and areas. Both are important.
- Priorities are difficult to establish because of the great diversity in Aboriginal populations and communities. Priorities depend on factors such as geography, economic factors and existing infrastructure. Surveillance initiatives must respond to each community and region, although there are core issues and factors that affect all.
- Ownership of data is a crucial issue. Aboriginal peoples want to own their data, which allows them to do address their own issues and priorities in ways that are useful to them.
- Health surveillance initiatives must be linked together as part of an integrated approach that contributes to Aboriginal health planning capacity.
- Overall success factors for effective aboriginal surveillance initiatives are: a focus on building community capacity; an integrated approach from planning to analysis to data dissemination; a sustained approach with follow through on initiatives; linkage and integration between different surveillance initiatives; and community ownership and control of data. The process must be culturally appropriate to meet the needs and realities of communities.

5. International Comparisons

5.1 Overview

This section presents an overview of food and nutrition surveillance systems in other western developed countries. Australia, New Zealand, the United States and the United Kingdom were chosen for inclusion in the environmental scan because information was relatively easily accessible and because at the same time their populations and food supply, and their health issues, are quite similar to Canada's. Australia and the U.S. have a federal structure, with a division of responsibilities for health between the national and state level, so offer some degree of similarity to Canada's structure. All of the countries except the U.K. have an aboriginal population, so offer an opportunity for comparison in that regard.

Unlike Canada, each of these countries has a major national nutrition survey in place. The U.K. and the U.S. have an ongoing program of rolling population surveys that cover all age groups. Australia and New Zealand have recently completed a major national survey, with a commitment to periodically repeating the survey. Australia's survey, completed in 1995-96 with results published in 1997-98, surveyed the population over 2 years of age. New Zealand surveyed the adult population in 1996-97, with results published in 1999, and is now planning a national children's survey. All countries except Australia include biological sampling in their methodology.

All of the surveys are totally funded by the public sector, although different countries have some method of seeking input to survey planning from the voluntary sector and the private sector food industry. The main users of the survey data in the four countries are government departments and agencies.

Although it was not possible to obtain detailed information on approaches for ensuring appropriate inclusion of Aboriginal populations in national nutrition surveillance, the three countries with an Aboriginal population indicated they faced similar challenges as Canada. And, similar to Canada, the three countries are developing approaches to ensure extensive Aboriginal involvement in all phases of surveillance initiatives, and to address the issue of control and ownership of data by Aboriginal communities.

Key informants from the four countries indicated that the results of the national surveys are well worth the expense involved, and make an invaluable contribution to public policy and program development and monitoring of outcomes.

5.2 United States

The United States has a complex and comprehensive system of coordinated nutrition monitoring activities that provide information about the dietary, nutritional and related health status of Americans; the relationships between diet and health; and factors affecting dietary and nutritional status. Surveys, surveillance systems and other monitoring activities comprise the measurement component of the Ten Year Comprehensive Plan for the National Nutrition Monitoring and Related Research Program (NNMRRP), published in 1993. The program is based on the *National Nutrition Monitoring and Related Research Act of 1990*, which required development of a comprehensive 10 year plan which includes: collecting quality data that are continuous, coordinated, timely and reliable; using comparable methods of data collection and reporting of results; conducting relevant research; and efficiently and effectively disseminating and exchanging information with data users. The NNMRRP is overseen by an Interagency Board co-chaired by the Assistant Secretary for Health, US Department of Health and Human Services (DHHS) and the Under Secretary of Research, Education and Economics, US Department of Agriculture (USDA).

Monitoring information from the NNMRRP is used primarily for Federal Government policy making and assessment of policy outcomes, including food safety, food fortification, food labeling, dietary guidance, tracking progress toward nutrition and health objectives, and setting nutrition research priorities.

The NNMRRP includes approximately 90 separate monitoring surveys/activities/systems, including about 15 at the state level. Major activities are:

Food and nutrient consumption	<ul style="list-style-type: none"> • National Health and Nutrition Examination Survey (DHHS) • Total Diet Study (DHHS) • Continuing Survey of Food Intakes by Individuals (USDA) • Nationwide Food Consumption Survey (USDA)
Nutritional and health status	<ul style="list-style-type: none"> • National Health and Nutrition Examination Survey (DHHS) • Pregnancy Nutrition Surveillance System (DHHS) • Pediatric Nutrition Surveillance System (DHHS)
Dietary knowledge, attitudes and behavior	<ul style="list-style-type: none"> • Health and Diet Survey (DHHS) • Behavioral Risk Factor Surveillance System (DHHS) • Diet and Health Knowledge Survey (USDA)
Food composition	<ul style="list-style-type: none"> • Food Label and Package Survey (DHHS) • National Nutrient Data Bank (USDA)
Food supply	<ul style="list-style-type: none"> • Food and Nutrition Supply Series (USDA)

- *National Health and Nutrition Examination Survey (NHANES)*. Collects data from a nationally representative sample. Gathers data on food and nutrient consumption, nutritional and health status, and dietary knowledge, attitudes and behavior (along with a wide range of other health information). Includes physical examinations and clinical and laboratory tests with interview respondents. Physical exam and 24 hour dietary recall done in mobile clinics. Was administered in 1971-74, 1976-80 and 1988-91 (NHANES I, II and III). These surveys were supplemented by the Hispanic HANES (1982-1984), follow-up surveys of NHANES I respondents, and matches of NHANES II respondent records to vital statistics records. Beginning in 1999, NHANES was implemented as a continuous annual survey linked to related Federal data collections on the general population, particularly the National Health Interview Survey, and potentially to USDA food consumption surveys. Annual collection of data will be from a representative sample of the entire population of all ages (unlike earlier surveys which required several years to obtain a nationally representative sample). The annual sample will be approximately 6,000 people interviewed, 5,000 of whom will receive a physical examination. There will be over-sampling of selected subgroups. Starting in 1999, data collection will be almost completely automated.
- *Continuing Survey of Food Intakes by Individuals (CSFII) and Diet and Health Knowledge Survey (DHKS)*. Since the mid 1980s, CSFII has provided regular information on individual dietary intake from a nationally representative sample, using an in-home interview. In 1994-96 (the most recent survey), the sample covered both the general and low income populations. The DHKS collects data on dietary knowledge, attitudes and behaviors, as a follow up to CSFII interview. The combined data are used to inform policies relating to food production and marketing, food safety, food assistance and nutrition education.
- Work is now underway to integrate the dietary assessment component of NHANES with the CSFII. The resulting integrated survey will be termed the National Food and Nutrition Survey. Ongoing research activities to prepare for the integrated survey include extensive methodologic research and validation studies involving telephone and in-person modes of data collection. USDA has lead responsibility for a new automated dietary intake and processing system and supporting data bases. USDA and DHHS have agreed to adopt a common core questionnaire consisting of diet, health and demographic questions.
- *State-based surveillance systems*. The Pregnancy Nutrition Surveillance System (PNSS), the Pediatric Nutrition Surveillance System (PedNSS), and the Behavioral Risk Factor Surveillance System (BRFSS) are state based surveillance systems set up to provide quick information to states for planning and managing nutrition and health programs. Participating states collect data with technical and other assistance from DHSS. PedNSS and PNSS rely on data from clinic records in publicly funded health, nutrition and food assistance programs. BRFSS data are gathered through telephone interviews with adults 18 years and older, which include an optional module for assessment of dietary fat and fruit and vegetable consumption.

- *Total Diet Studies* analyze nutrient and contaminant levels in the food supply. The *Food Label and Package Survey* monitors labeling practices. The *Health and Diet Survey* assesses dietary knowledge and practices as related to health problems. USDA food composition and food supply activities are not surveys. Food composition data is gathered from the food industry and other sources. Food supply calculations rely on data on exports, and beginning and year-end inventories.

5.3 Australia

The following are the main elements of Australia's food and nutrition monitoring capacity.

- *Food and Nutrition Policy (FNP)*. Adopted in 1992 to facilitate and support action through the entire food and nutrition system. The purpose of the policy was to improve health and reduce the preventable burden of diet-related early death, illness and disability. The fourth goal of the policy is "ongoing monitoring and surveillance of the food system.
- *National Nutrition Survey (NNS)*. This was a key activity to implement Goal 4 of the FNP. The purpose was to provide national data on food and nutrient intake patterns, dietary habits and key body measurements. No blood sample was included because of cost. NNS was linked to the National Health Survey (NHS). The NNS sample of 3,800 people 2 years of age and over was a sub-sample of the overall NHS sample, so all results can be linked to NHS questions/data. U.S. survey instruments and data collation systems were adapted for use in Australia. Personnel from the two countries worked closely together in the planning stage.

Data gathering took place in 1995 - 1996. Four reports on NNS results were published in 1997 and 1998. There were previous national dietary surveys of adults in 1983 and school children in 1985.

Objectives of the NNS were to "assist industry and health professionals in the food and nutrition sector, including government, research and teaching, and industry to:

Monitor food intakes against Dietary Guidelines, compare nutrient intakes against required daily intakes (RDIs), and assist with further revision of RDIs;

Assess changes in dietary habits and nutritional status since previous surveys in 1983 and 1985, and provide a basis for comparisons to future regular surveys;

Monitor the impact of the Food and Nutrition Policy;

Monitor progress on and assist in future revision of nutrition related National Health Goals and Targets;

Develop food policy and regulations related to food safety and composition, and assist in provision of information related to food production, manufacture and sales; and

Provide information on the interrelationship of health, social economic and nutrition variables in selected population subgroups for policy development; and provide a basis for nutrition promotion strategies.”

- *National Food and Nutrition Monitoring System*. A plan for a monitoring system was developed by the Australian Institute of Health and Welfare Food and Nutrition Monitoring Unit, in response to Goal 4 of the Food and Nutrition Policy. The work, funded by the Commonwealth Department of Human Services and Health, began in 1994 and was published in June 1995. The planned system is to provide information for policy development, evaluation and review; program planning and assessment; reporting against nutrition goals and targets; and meeting international reporting commitments. Included are an ongoing program of health and nutrition surveys; development of a national system for monitoring food quality and safety; increasing the value of relevant existing nutrition data collections; and development and promotion of standard data collection methods for nutrition monitoring.

The only recommended activity that was implemented immediately was the NNS. Funding was provided in 1997 for development and implementation of additional elements of the full monitoring system recommended in the plan. Work is being done by a university consortium under contract to the Commonwealth Department of Health and Family Services (new name for the federal Department). Other stakeholders being consulted include the states and territories, and the food industry.

- *Apparent Consumption of Foodstuffs and Nutrients in Australia*. Calculation of estimated per capita consumption based on food production, manufacturing and trade data.
- *Australian Market Basket Survey*. Monitors the level of undesirable substances in foods to determine if diets meet reference standards. Depends on current data on food intakes of various groups in the population.
- *Survey of Microbiological Status of Foods*. A joint state-Commonwealth government initiative to provide data to develop microbiological standards and codes of hygienic practice. Is no national database for collection of data on food safety.

5.4 New Zealand

The following are the main elements of New Zealand’s food and nutrition monitoring capacity.

- *National Plan of Action for Nutrition*. Prepared in follow up to commitments made at the 1992 International Conference on Nutrition and released in 1995, this is a 10 year strategic plan. It was prepared within the framework of an overall initiative to set strategic directions to improve public health that included goals, objectives and targets. Food and nutrition objectives and targets were included under the social and physical environment goal, and addressed 3 themes: improving household food

security, improving food safety and quality, and promoting healthy diets and healthy lifestyles. Each theme has objectives on research and information which include various ongoing nutrition monitoring initiatives, and establishment of a National Nutrition Survey.

- *National Nutrition Survey (NNS97)*. Voluntary cross-sectional population survey of 5,000 adults, with significant over-sampling of Maori and Pacific people. The NNS97 sample is a sub-sample of the NZ National Health Survey, so results can be linked with broader health status and risk factor information from the NHS. NNS97 data were gathered from December 1996 to December 1997, and the Report was published in August 1999. A computer assisted data entry system was developed for the survey, and the US and Australia assisted in design of survey methodologies. Blood pressure measurement, a blood sample, and anthropometric measures were included.

There was special focus on participation of Maori people through consultation, resource allocation and development of culturally appropriate methods for collection and dissemination of data.

The intent is to repeat the survey on a 5 year or 10 year cycle, although there is no firm financial commitment to this. Previous national surveys that included nutritional status and dietary intake information were done in 1977 and 1989/90.

Objectives of the survey were to:

Provide data on nutrient and food intakes suitable for risk assessment to set and review regulatory food policies (e.g. fortification and contaminant monitoring);

Assist in development of food policy and regulations related to food composition and safety, and assist in provision of information related to food production, manufacture and sales;

Monitor food and nutrient intake against Food and Nutrition Guidelines and Required Daily Intakes (RDIs);

Provide a baseline for future surveys in order to assess changes in dietary habits and nutrition over time;

Assist with ongoing development and monitoring of nutrition policy; monitor and assist in future revision of nutrition related health goals and targets;

Provide information on the interrelationship of health, social, economic and nutrition variables in selected population subgroups, for policy development, including health promotion;

Provide a basis for nutrition education and other nutrition programs;

Facilitate development of nutritional status and dietary intake indicators which could be used for more frequent regular surveillance; and

Provide information on chlorinated organic chemicals (dioxins, PCB, pesticides) to be used for development of environmental policy and standards.

- *National Children's Nutrition Survey.* Work is now in the development stage. As part of the National Plan of Action on Nutrition, the NZ Ministry of Health had established a plan for a program of periodic surveys, including a children's survey. A strong emphasis on children by a new government created an opportunity, and because some planning work and costing had been done, it was possible to respond quickly with a proposal for a national children's nutrition survey, which was approved. The systems and structures developed for the adult survey provided a foundation, although there were many new methodological and process challenges for a children's survey.
- *Ongoing Core Surveillance Activities.* Food Composition Data Base; Therapeutic Data Base; Total Diet Survey; Food Balance Sheet Statistics (food available for consumption, hasn't been done for past 2 years).

5.5 United Kingdom

The following are the main elements of the United Kingdom's food and nutrition monitoring capacity.

- *National Diet and Nutrition Survey.* The UK has an ongoing program of rolling surveys established in 1992 by the Ministry of Agriculture, Fisheries and Food and the Department of Health. Discussions about the need for national nutrition surveys began in 1983. The first survey (adults aged 16-64) was conducted in 1987-88, with the report published in 1990. It was done as a successful feasibility study for an ongoing program of rolling surveys. The second survey on children aged 1 ½ to 4 ½ years was conducted in 1992, with the report published in 1995. The third survey of people 65 years and over was done in 1995, with the report published 1998. The fourth survey of children 5 to 15 years was done in 1997-98, with the report due in 2000. A second adult survey will be conducted in 2000, the feasibility/pilot study is now underway.

The main driving force for establishing and continuing the program of rolling surveys is the need for information for food chemicals risk assessment. It was successfully argued that there are no suitable alternatives to large population surveys to obtain the necessary information. Funding approval for each new survey has not been an issue. There continues to be a strong political commitment to the ongoing survey program, to provide the basis for evidence-based decisions about food risks and safety.

The Ministry of Agriculture, Fisheries and Foods (MAFF) has the administrative lead, and MAFF and the Department of Health jointly fund and direct the survey program. An open tender process is used to select the organization which conducts each survey. All tenders have been won by the Government Office of Population Census and Surveys, except for the 65 and over survey which was done by a non-profit organization. Biological measures are tendered separately, and so far all have been done by the government's Medical Research Council Nutrition Unit.

The surveys include dietary intake, anthropometric measures, blood and urine sample, blood pressure, oral health, self-reported physical activity and bowel movements. No information is gathered on dietary knowledge, attitudes and practices. All surveys are cross-sectional. Respondents are asked for consent to access National Health System mortality and cancer data, to enable research on diet-health links.

The main uses of the survey information are: to do food chemicals risk assessment (based on levels of additives, contaminants and other chemicals in foods combined with dietary intakes of population at large and vulnerable sub-populations); to meet European Union legal requirement for food monitoring; to inform food and nutrition policies such as food fortification, dietary supplements, and nutrition guidelines; to provide a basis for nutrition public education; to generate input to research studies; and to support development of nutrition program standards, e.g. for food lunch programs.

- *National Food Survey*. Annual calculation of per capita food and nutritional intake based on household food purchase data.
- *Total Diet Study*. Construct “average diet” from Nutrition Survey and National Food Survey data, to assess dietary and environmental risks for selected foods and high risk populations.
- *Health Survey for England*. Focus on health perceptions and outcomes, health care system experience, includes little information on nutrition. No capacity to link individual results with national nutrition surveys.
- *Smaller surveys of special sub-populations*. Special surveys are undertaken to investigate questions and issues arising out of large surveys, issues related to current policy initiatives, explore knowledge and attitudes, learn more about under-sampled groups, etc. For example, a special survey of low income populations is currently being planned.

5.6 Other European Countries

Although key informant interviews and document reviews were not undertaken for countries other than the above, the key informant for the UK was able to provide information about national nutrition surveys in other European Union countries.

The following European Union countries have conducted national nutrition surveys, and most have a commitment to periodically repeating the survey:

Belgium in the early 1980s

Denmark in 1995

France in 1993/94 and 1998/99

Germany in 1987/88 (West Germany only)

Ireland in 1989 and 1997
Italy in 1994-96

6. Conclusion

The information summarized in this Environmental Scan clearly illustrates that Canada lacks the national food and nutrition surveillance information required to support policy and program development, to measure the impact and outcomes of policies and programs, and to anticipate emerging issues to allow a proactive response. This lack places Canada alone among western industrial countries to which we usually compare ourselves on health matters.

There are significant pressures to remedy the situation, including continuing high levels of nutrition-related health problems and associated costs, the high public profile of food safety issues, and significant public demand for solid information about healthy eating. There are also opportunities that make action timely and feasible. Improved health information for evidence based decision making is a priority of governments throughout the country, and funding is being made available for new initiatives. Health Canada is undertaking several initiatives to improve the food and nutrition capacity of the Department. And new information technologies and new biotechnologies are enabling dramatic advances in what is possible in nutritional and health surveillance, providing the possibility of Canada taking a leading edge position in the application of state of the art methods to better understand the links between nutrition and health. But there are also challenges which will require thoughtful analysis, careful planning and attention to effective partnerships.

The material which has been brought together in this Environmental Scan is intended to provide part of the information base for development of plans and actions to enhance Canada's food and nutrition surveillance capacity. A companion document titled *The Case for Enhanced Food and Nutrition Surveillance in Canada* outlines the key elements of an enhanced national capacity, presents the rationale for investment in enhanced surveillance, and considers possible partners in a future national food and nutrition surveillance system.

Appendix A: Key Informants

International

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***Interviews with Health Canada
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Francoise Bouchard (Cancer Bureau,
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Elaine Jones-McLean (Cancer Bureau,
LCDC) (Contribution through
documents)

Howard Morrison (Behavioral Risk
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David Mowatt (National Health
Surveillance Network, HPB)

Fraser Scott and Danielle Brulé (Foods
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Appendix B: Past Initiatives to Develop a National Food and Nutrition Surveillance System

Discussion Paper on a National Food and Nutrition Monitoring System for Canada. 1992.

Prepared by the National Institute of Nutrition. Funded jointly by the food industry and Agriculture Canada. Outlined the characteristics and necessary components for a national monitoring system, data base components, and proposed an organizational model for implementation coordinated by NIN.

Feasibility Study: National Nutrition and Food Consumption Survey. Spring 1993. Prepared by Statistics Canada under contract with Agriculture and Agri-Food Canada.

Food and Nutrient Consumption Roundtable Meeting. November 1993. Co-hosted by Agriculture and Agri-Food Canada and Health Canada. Attended by federal and provincial government, NGO and food industry representatives. Purpose was to identify data gaps and make recommendations about how to fill them.

Nutrition and Food Consumption Survey Draft Planning Report. 1997. Prepared by Statistics Canada for Health Canada Pest Management Regulatory Agency.

Dietary Intakes in Canada: What do we know? Where do we go from here? 1996.

Symposium sponsored by the Expert Committee on Nutritional Aspects of Foods, Canadian Agri-Food Research Council. Purpose was to consider existing monitoring activities and data sources in Canada, hear about what other countries are doing, and make recommendations on next steps.

Nutrition for Health: An Agenda for Action. 1996. Joint Steering Committee responsible for development of a national nutrition plan for Canada sponsored by Health Canada. Endorsed by Ministers of Health Canada and Agriculture Canada. Fourth strategic direction includes improved ability to monitor nutritional health and respond appropriately. Recommended actions include development of a data base of indicators of nutritional status and food practices, linked to social, economic, cultural and educational data.

Draft Discussion Paper on a Core Nutrition Component for the National Population Health Survey. Health Canada and Statistics Canada. May 1997.

Appendix C: Members of the Food and Nutrition Surveillance System Working Group

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