

RURAL ECONOMY

**Integrating Food Policy with Growing Health and Wellness
Concerns: An Analytical Literature Review of the Issues
Affecting Government, Industry, and Civil Society**

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Mel Lerohl, and José Lomeli

Project Report #05-01

Project Report



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(Executive Summary and Full Report)

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A Report to Agriculture and Agri-Food Canada, Food Value Chain Bureau

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Executive Summary

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Agriculture and
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Executive Summary of *Integrating Food Policy with Growing Health and Wellness Concerns: An Analytical Literature Review of the Issues Affecting Government, Industry, and Civil Society*

A Report to Agriculture and Agri-Food Canada, Food Value Chain Bureau, submitted May 2004, revised December 2004.

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A recent letter to the editor printed in *The Edmonton Journal* ended with the question, “How many more needless deaths?”¹ The letter was not addressing the violence in Darfur, distribution of pharmaceuticals, or AIDS – it was a comment on new dietary guidelines released a few days earlier in the United States. The tone of this letter highlights the growing concern over the linkages between food and health. Especially over the last ten years, such issues have received increasing public attention in both the policy and media arenas. One of the major drivers of public policy interest in this area is an increase in health costs that are attributable to diet-related causes. Lawsuits over issues of dietary liability, the popularity of books and movies such as *Fast Food Nation* and *Supersize Me*, and a barrage of quotable and terrifying statistics have all helped contribute to a growing consensus that we are facing a new crisis of food-related health concerns.

If we are to address these concerns as a society, we must first recognize that consumer food choices are complex. Designing effective policies to change consumer attitudes may therefore be difficult and costly, and requires an integrated approach. Incentives offered to primary food producers, processors, retailers, and restaurateurs must be in line with societal goals, regulatory oversight must be consistent, and consumers must be provided with adequate information. In order to work toward better, more effective policies, it is desirable to review the actions and recommendations that the medical profession, multinational organizations, NGOs, the food industry, and national governments have undertaken. It is also important to assess the impacts of policies that have been proposed in other contexts, such as those developed to control the use of tobacco or those that govern the agri-food distribution system. To that end, University of Alberta researchers, at the request of Agriculture and Agri-Food Canada, undertook a literature review that addressed the following major areas:

- I.** Part I consists of an overview of health and disease and the relationship between health and individual food consumption. Data are drawn from the medical literature. Discussion centres on a summary of various meta-analyses that link health to foods consumed.
- II.** Part II summarizes major international organizations’ views about food health issues. We detail the FAO and WHO's positions on food and health and

¹ “More Wheat, Less Rye,” *Edmonton Journal*, p. A13 (17 January 2005).

discuss the actions taken by various NGOs, including Canadian cancer and stroke organizations.

- III.** Part III focuses on the food industry. The authors provide examples of the ways in which North American food firms have responded to health issues. This section also includes a summary of major food manufacturers' product advertising activities.
- IV.** Part IV centres on public policy issues, such as the development and marketing of the Canadian Food Guide and governmental regulation of advertising for individual foods.
- V.** Part V includes a synopsis and recommendations for further research.

The remainder of this paper provides a summary of the full document, prepared by Sean B. Cash, Brett Cortus, Ellen W. Goddard, Alice Han, Mel Lerohl, and José Lomeli for the Food Value Chain Bureau of Agriculture and Agri-Food Canada. All citations and references are provided in the full report.

I. Overview of Health and Disease Issues Related to Individual Food Consumption

Considerable research has been devoted to the relationship between the intake of individual food categories and the incidence of disease. In this review, the authors have focused on studies that concern coronary heart disease, cancer, stroke, and diabetes. In 1993, these four diet-related diseases accounted for an estimated \$29.4 billion in direct and indirect health costs (calculated in 2004 dollars), or 19 percent of all Canadian health care costs.

The deluge of dietary advice implied by these studies often bewilders consumers and policymakers alike. The reports, as reflected in the popular press, can often appear conflicting, or may seemingly require consumers to choose from a menu of disease risks they wish to face. For example, the consumption of ocean fish may provide important benefits in the fight against cancer and coronary heart disease, yet heavy metal pollutants in these same foods may cause nervous system and developmental problems. Although this review is far too brief to address many of these tensions, it does summarize the current knowledge about the relationships between the four diseases listed above and specific food categories of importance to Canadians. Specifically, the report summarizes research

linking coronary heart disease, cancer, stroke, and diabetes to the consumption of fruits and vegetables, meat, eggs, whole-grains, alcohol, sugar, dairy, fish, pulses, soy, and nuts.

The studies reviewed suggest that fruit and vegetable consumption has a protective effect against coronary heart disease, cancer, and stroke; that meat consumption may be correlated with many forms of cancer; that moderate consumption of alcohol may help prevent coronary heart disease, stroke, and diabetes, while at the same time contributing to the risk of cancer; and that whole grain consumption may have protective effects against all of the diseases reviewed here. These findings are summarized further in Table 1 below.

Table 1: Study Counts of Associations between Foods and Diseases

	CHD			Cancer			Stroke			Diabetes		
	P	NE	D	P	NE	D	P	NE	D	P	NE	D
Fruits and Vegetables	16			8	2		2					
Meat					34	82						
Eggs		1										
Whole Grains	15	1		29	4		1			3		1
Alcohol (Moderate Consumption)	5				5	25	2	1		1		
Sugar												
Dairy	3						2					11
Fish	8	3		24	6		2	1				
Pulses	3			1								
Soy Protein	41	5										
Soy Isoflavones				4	1							
Nuts	11											

P = Protective; **NE** = No Effect; **D** = Detrimental

II. The Multilateral and Non-Governmental Organizational Perspective

Two multilateral organizations – the Organization for Economic Cooperation and Development (OECD) and the World Health Organization (WHO) – have shown significant interest in health issues. The OECD is an organization that has 30 members, who represent countries with developed economies. Its main health focus is on the costs and sustainability of health systems in member countries. The World Health Organization is a member organization of the United Nations, and represents countries at varying stages of the development cycle. It has long held the view that nutritional well-being maintains a fundamental role in health and human development, and its key

activities include nutrition promotion and the prevention and reduction of malnutrition. Accordingly, the WHO has been directly involved with the relationship between nutrition and human health.

As a United Nations organization, the WHO has, for many years, commissioned or reviewed literature on diet and health. The WHO has identified nutrition as a major and modifiable determinant of chronic disease. This concern is reflected in the release of major sets of diet and health-related recommendations in 1990 and 2002. The differences between the 1990 and 2002 recommendations, highlighted in the full report, correspond to the evolving nature of the research base that links the two issues. However, the difference in the WHO's recommendations also appears to reflect a decreased level of attention to issues of food inadequacy and a shift in focus toward issues of appropriate food selection. The perception appears to be that most of the countries of the world are able to provide adequate diets, at least in terms of calories. Accordingly, the WHO's recommendations increasingly focus on the particular foods that make up these diets, rather than on issues of calorie or protein deficiency.

The synopsis of a 2003 WHO position paper on integrated prevention of non-communicable diseases incorporates specific recommendations that include limiting energy intake from fat and shifting consumption from saturated and trans-fatty acids to unsaturated fats; increasing consumption of fruits, vegetables, legumes, whole grains, and nuts; limiting the consumption of free sugars; limiting salt and ensuring that it is iodized; achieving energy balance for weight control; engaging in adequate levels of physical activity throughout the life course; and controlling tobacco use.

The WHO also describes the various levels of government responsibility for achieving these goals. It argues that, at the country level, governments need to develop national strategies around diet and physical activity, and that they need to establish dietary and physical activity guidelines; conduct education, communication, and public awareness (social marketing) campaigns; develop appropriate approaches to deal with the marketing of food to children; create effective labelling; and monitor health claims. In order to promote healthier food choices, the WHO encourages governments to consider the use of market incentives for developing and marketing healthier foods, reducing the salt content of processed foods, restricting the hydrogenation of oils, and limiting the excess sugar content of beverages. The WHO also says that governments can also use price policies to encourage healthy eating and physical activity, taxes to increase or decrease the consumption of food, and subsidies to promote access to recreational and sporting facilities. Finally, food programs and agricultural policies should encourage healthy eating (for example, by increasing the production of healthy foods). WHO

also recognizes the role of NGOs and industry, and makes specific recommendations as to how they can contribute to the prevention of diet-related disease.

In Canada, there are a number of non-governmental organizations (NGOs) that engage in research, policy advocacy, and public education about the relationship between health and diet. Many of these NGOs are organized around specific disease groups and, as such, have focused their efforts and recommendations in specific areas. Groups such as the Canadian Cancer Society, the Heart and Stroke Foundation of Canada (HSFC), the Canadian Lipid Nurse Network, the Canadian Association of Cardiac Rehabilitation, and the Dietitians of Canada have all made specific dietary recommendations in press releases, and often through expensive social marketing campaigns. For example, in 2001 the Canadian Cancer Society and the HSFC spent over \$40 million combined on public education.

In all cases, the organizations reviewed hold strong and relatively consistent views about the links between diet and disease. For example, several of the organizations surveyed here promote the idea that many cancers are diet-related, or that diet, at a minimum, predisposes individuals to certain types of cancers. The way in which the corresponding policy statements are framed suggests that the organizations view added public information as crucial. The “*5 to 10 a day...Are you getting enough?*” public awareness program, funded by the Canadian Cancer Society and the Heart and Stroke Foundation, in cooperation with the Canadian Produce Marketing Association, is an example of this. Some organizations have gone so far as to make policy suggestions that are designed to restrict access to “bad” foods, encourage access to “good” foods, and require persons to engage in increased physical activity. Groups such as the HSFC and the Dietitians of Canada have suggested that some aspects of the puzzle, such as overconsumption of less healthy foods, are issues that require the institution of stronger measures than the mere provision of public information.

The litany of diet-related concerns raised by Canadian NGOs raises the question of who should take the lead in addressing these issues. In February 2004, the Heart and Stroke Foundation (HSFC) indicated that the increasing number of overweight and obese Canadians poses one of the greatest-ever threats to public health in this country. Almost half (47%) of Canadians are overweight or obese. When the HSFC asked Canadians whom they felt was responsible for responding to this issue, eighteen percent indicated that some level of government should take the lead. Only two percent thought that the food industry should show leadership. Despite this, the HSFC argues that action on the part of the food industry is a key part of the puzzle. In its call to action, the HSFC urges the food industry to modify the food supply by reducing saturated and trans fat in foods; restrict the distribution

and advertising of “junk foods” (energy-dense, nutrient-poor foods) to children, and remove these foods from elementary and high school vending machines and cafeterias; ensure that portion sizes and pricing are in alignment; and improve nutritional labelling and information in quick-serve restaurants.

III. The Industry Perspective

As implied by the HSFC statements above, any changes in food consumption patterns depend on the actions of players within the food system. In this case, the relevant groups are processors, retailers, and restaurants. These groups may resist the imposition of standards and labelling or ingredient restrictions if they feel that these do not meet their best interests; thus, it may need to be given incentives to develop new products. Given that the food industry serves as the main agent that determines which products consumers can purchase and in what forms, it has the power to significantly modify behaviour through its marketing and advertising strategies. In general, those strategies that will provide industry with positive outcomes are likely to be more effective than will any action the industry resists.

Over the last decade, consumers have become more concerned with eating nutritious foods. The food industry in Canada and abroad has responded by offering healthier products. The food industry clearly recognizes that nutrition is an issue that will continue to occupy the spotlight, particularly given the fact that populations across the globe are aging and nations are incurring increased health care costs. Industry’s goal has been to attend to consumer preferences: Consumers’ desires for healthy, tasty, and convenient alternatives drive the food industry’s actions. This has been the motivation for PepsiCo, Inc., through its subsidiary Frito-Lay, to eliminate trans-fats from its salty snacks, or for Cargill Health & Food Technologies to formulate phytosterols to be used as cholesterol-reducing agents in foods, beverages, and dietary supplements.

In Canada, most of the top ten food processing companies have displayed some interest in responding to an increased consciousness about nutrition. The full report summarizes the publicly stated positions of these companies, primarily obtained from recent company press releases. It is clear that some food processing industry players expect the rise in obesity to be tackled not only by industry, but also by consumers and possibly government. Additionally, some companies state that their traditional products can be included in a healthy diet when consumed in moderation, an avowal that

illustrates how important food manufacturers feel it is to continue to sell popular, long-standing products.

The review also summarizes many of the new products introduced in Canada in response to changing health concerns. Many of the new entries are intended to meet the needs of persons who are on restricted diets due to allergies or other health concerns. However, due to the fact that at any given time only eighteen percent of Canadians are on a diet and only one percent of the population follows a low-carb diet, companies have stated that their main focus remains on their biggest brands. At the same time, at least some Canadian industry groups have been involved cooperatively with government agencies in addressing nutritional concerns for over twenty years.

With respect to nutrition and health, the multinational food industry has generally been more active than its Canadian counterpart, particularly in its observable public relations. The report lists the nutrition- and health-related statements of the top ten food manufacturers worldwide, as determined by sales figures. These announcements discuss research findings that support consumption of their products, the development of educational initiatives, and the impact of new products. These corporations also stress physical activity as a major promoter of wellness, and have been fighting youth obesity in various Asian countries by establishing programs that emphasize non-sedentary lifestyles.

Innovation is a very important part of the food business, and the industry works with research institutes and governments to offer healthy alternatives. However, traditional factors, such as price and taste, remain important to consumers. Thus, new products must be reasonably priced, tasty, healthy, and also convenient. Other issues currently being addressed by the international food and beverage industry include the media's impact on children and the importance of developing responsible marketing programs; the regulation of health claims used in good-for-you products; and the importance of portion size in promoting healthier eating habits.

Food industry companies also contribute to various national and international trade associations. Given that these associations represent a variety of companies and sometimes a multitude of industry groups, their agendas are often broader than those of the individual companies. A review of press releases indicates that groups such as the Food and Consumer Products Manufacturers of Canada, The Canadian Council of Grocery Distributors, and the Grocery Manufacturers of America indicates that these groups have been engaging emerging health issues not just through promotion of new products. These groups have also been actively commenting on issues such as nutritional and other forms of labelling; food safety; supporting social marketing initiatives, such as "5 to 10 a Day" fruit and vegetable consumption recommendations; food product health claim monitoring; and snack or

“fat” taxes. Although the trade associations’ positions sometimes echo those of NGOs and the WHO, they often differ markedly in their view of regulatory and legislative interventions.

Another important aspect of industry involvement in food and health is that many meals are eaten away from home, and a majority of these meals are consumed at fast food restaurants. In the early 1980s, there was a “first round” of fast food innovations designed to appeal to health-conscious consumers. Many of these initiatives were driven by the attempts of smaller chains to differentiate themselves from the industry leaders and capture a larger market share of young adults. Continued declines in red meat consumption during the early 1980s, and particularly in beef consumption, also led the industry to think about changing the traditional burger meal. It expanded its offerings in order to ensure that it could continue to increase its share of the food dollar. In 1980, McDonald’s introduced Chicken McNuggets in the U.S., and, after that, almost all of its competitors followed the lead. Although chicken was viewed as a healthier choice than beef, the reality is that the breaded, deep-fried pieces of chicken that most fast food restaurants serve do not qualify as significantly healthier options. By the beginning of the 1990s, McDonald’s had jumped on the health bandwagon, and it began showcasing its reduced fat McLean Deluxe burgers and its salads and low-calorie yoghurt cones. Wendy’s also began to offer better-for-you items, such as salads and chilli, but these were not actively promoted as healthy items. Kentucky Fried Chicken reacted to the nutrition trend by compressing its name in order to avoid the negative connotations of the word “fried.”

Although the apparent nutrition consciousness pushed restaurateurs to include better-for-you items on their menus, consumers’ real demand for them was so poor that fast food chains crossed many of them off their lists not long after they were launched. Instead of flocking to eat the healthy alternatives, consumers seemed more responsive to additional high-fat items: McDonald’s launched a Triple Cheeseburger and “dinosize” fries in 1993; Pizza Hut offered the Bigfoot, a rectangular pizza measuring two feet by one foot; Domino’s Pizza introduced the 30-slice Dominator; and Burger King enlarged its fish sandwich by 43 percent. People appeared to want more for their money, and the industry responded through larger portion sizes.

In 2002, U.S. Surgeon-General David Satcher declared a “call to action” on obesity, and compared obesity to smoking. Many Americans felt that their huge serving sizes were to blame. Young and Nestle (2002) carried out a study to identify historical changes in the sizes of marketplace foods. They found that food portions began growing in the 1970s, expanded in the 1980s, and have continued to increase with body weights. Young and Nestle point out that increased consumption of fast foods

contributes to increased caloric intake, and this problem can only be made worse by the “supersizing” of menu items.

Although in the early 1990s the leaner burger was not a hit for McDonald’s, in 2002, the company again decided to offer healthy alternatives and launched a “Light Choices” menu category. Other food businesses are also introducing their own healthy items: Burger King has salads and the grilled, not-breaded, Chicken Whopper; Wendy’s has a complete line of salads; and Tim Horton’s offers some low-fat bakery items, soups, and sandwiches. Subway has very effectively exploited the trend toward health-consciousness with an advertising campaign that features a college student who went from 425-pounds to 180-pounds by eating a diet of two Subway sandwiches daily.

At the same time, a group of heart disease sufferers sued an array of fast food franchises, including Burger King, Wendy's, Kentucky Fried Chicken, and McDonald's. This move has made companies aware of the importance of providing consumers with nutritional information. Health advocates and lawyers increasingly try to place the blame for the U.S.’s growing obesity problem on fast food companies, and are borrowing tactics that opponents of smoking have used successfully against tobacco companies. In 2002, in New York, two teenagers filed a lawsuit against McDonald’s, stating that the company had failed to provide information about the health risks associated with consuming its products.

Fast food restaurants have found that the public now embraces their low-fat menu items. Additionally, many companies are trying to respond to consumer nutrition concerns by highlighting the ways in which they are making their traditional offerings more healthful. Recent moves by the fast food industry include announcements of reduced trans-fatty acid content; the availability of fresh fruits and vegetables in combination meal packages; bunless hamburger products; increased promotion of healthy lifestyles; and voluntary provision of increased nutritional information. Most fast food chains have attributed these changes to consumer demand for healthier alternatives. However, other factors, such as an increasing risk of lawsuits, possible regulations, and deteriorating images that need to be improved may affect their decisions. Whether fast food chains are taking responsibility because they care about customers’ well-being or because investors are pushing them, it is clear that the sector has responded.

It is apparent that not all processing firms or restaurants attach the same level of importance to nutrition-related issues, either because the individual firms believe that their products are satisfactory and require no public relations attention, or because they are unwilling to raise concerns about existing products through the introduction of new products. Many firms appear to respond to widespread media

coverage about the links between nutrition and health by developing new products, adopting labelling, or providing more information to consumers. Industry seems to be more receptive to positive interventions, and is generally willing to include health claims with products, rather than supporting “fat” taxes or bans on certain ingredients. Processing firms and fast food restaurants will continue to introduce new products; however, their main areas of focus will remain on their core businesses and existing products. A firm might, for example, continue to spend the bulk of its advertising budget on traditional products, and will invest only in product launch advertising for new products. Given that food processors and restaurants are significant forces in the distribution of foods to consumers, cooperation from this sector is integral to developing and maintaining any successful behaviour modification strategies that are aimed at reducing obesity and diet-related diseases.

IV. Food- and Health-Related Public Policy

It is in the social interest to achieve reduced medical costs and better quality of life through better food choices. These actions can be driven by policy makers, but only if they understand the complicated linkages between different policies, and between policies and behaviour. For example, it may be difficult to reduce consumption of particular food categories deemed to be less healthy if agricultural policies encourage the additional production of these goods and subsidize their use in food processing and restaurant preparations. Social marketing strategies that advocate for reduced consumption of such products may discourage consumers from buying such products at the grocery store. However, any industry surplus will either be exported, thus increasing the availability of these products in other countries, or will “disappear” through another avenue in food processing and will ultimately be consumed by the public.

This suggests that it can be quite difficult to determine the effects of public policy on the health of Canadians in general, and on dietary choice in particular. In the past, government policies designed to pursue specific goals were made in isolation of one another, particularly if they fell under the purview of different legislative committees or government agencies. Although this piecemeal approach is the obvious result of specialization among policymaking bodies, it has often led to unintended consequences. The dietary choices of Canadians are potentially affected by policies as varied as those regarding agriculture, transportation, education, unemployment, zoning, trade liberalization, and revenue generation. The need to better coordinate policymaking across

jurisdictions, and to examine virtually all public policy through a lens of health and nutrition, has become more apparent in today's environment of concern over issues such as high obesity rates and increasing health care costs.

In an effort to provide a review of the directions that policy recommendations are taking around the globe, the authors compared diet- and health-related policy recommendations from various agencies in Europe, Australia, and Canada. Of particular note is the focus in the European recommendations on agricultural policies and societal outcomes as they relate to health and obesity. All of the documents studied seem to agree about that solving health problems requires a mix of interventions related to food and physical activity; it is important to target health and eating messages to schools and children; and the food industry must be involved in marketing, promotion, and in providing health claims.

New and Existing Food Policies

As the health implications of diet become a matter of public concern, domestic agricultural policies' effects on consumers need to be more carefully examined. Even though observers have identified some of the links between general agricultural policy and food purchasing behaviour, attempts to trace the effects of specific public policies to the quality of the food basket produced by Canadian farms is new in Canada. A qualitative assessment of Canadian agricultural policies undertaken by the authors suggests that the dietary effects of existing Canadian agricultural policies have both positive and negative implications for consumer health. This is unsurprising because these policies were put into effect for reasons that had little, if anything, to do with consumer well-being. It should be noted, however, that reform of specific policies found to have negative impacts on consumer health will necessarily have distributional consequences that will not be universally popular.

Another major area of government involvement in dietary choice is embodied in "Canada's Food Guide to Healthy Eating." When the latest revision was first released in 1992, it was promoted as an effort that reflected changing eating habits and nutritional knowledge. The recent announcement that Canada's Food Guide is to be updated provides an ideal opportunity not just for incorporating new scientific findings regarding food intake and health, but also for reflecting on the interplay between these guidelines and other Canadian policies. Some question whether agricultural policy has made any effort to steer the national food supply in the direction of these recommendations. For example, U.S. policies that heavily subsidize corn production make corn meal, corn oil, and high-fructose corn syrup

very inexpensive inputs for processed foods across North America. This helps to keep the price of snack foods and soft drinks low. In contrast, fresh fruits and vegetables enjoy relatively little in the way of price supports.

It appears that the interaction between a healthy diet and encouragement to domestic industry to provide that healthy supply is not well understood. Greater cooperation between Health Canada and Agriculture and Agri-Food Canada is a necessary first step to resolving any tensions between healthy food choices and agricultural policy that may have evolved over time, as well as to developing public policy that promotes both the health of Canadians and the economic prosperity of the domestic agriculture and agri-food industry.

The impact of public policy on dietary health is not just limited to those policies that are directly related to food production or nutritional recommendations. Food choices can also be affected by policies relating to environmental control, worker safety, antitrust, and general trade policies. Opportunities to increase healthy lifestyles can be affected by urban design strategies and transportation policies. Jurisdictions have long exempted basic food items from sales taxes, sometimes with inconsistent implications. Furthermore, tax policies affecting any aspect of household consumption have income effects that may ultimately influence food choices.

The increased awareness of obesity as a public health concern has been reflected by recent actions in North American legislatures. Over the last three years, there has been a plethora of both media and government attention paid to obesity issues and the ways in which they can be regulated, legislated, and litigated. Some of the proposed legislation directly relates to so-called “obesity lawsuits,” such as a March 2004 vote in the United States House of Representatives in favour of a bill that would prohibit obesity lawsuits. Twenty U.S. states have passed or are considering similar legislation. U.S. state legislatures have also shown a willingness to get involved in setting explicit policies to address the problems and causes of obesity. Canadian legislators have also been considering obesity-related bills, such as the February 2004 proposal by a Winnipeg New Democrat MP that would effectively remove trans-fats from processed foods sold in Canada. Similar legislation has already been enacted in Denmark.

Tax policy is also being used to discourage obesity. One avenue is the so-called “fat tax” approach, which seeks to discourage consumption of unhealthy foods by increasing the effective price to consumers. For example, in April 2004, the Ontario government proposed to begin charging provincial sales tax for restaurant meals under \$4.00. The move was motivated in large part by a desire to increase the effective rate of taxation on fast food meals. In the face of public and industry

opposition, some of which is surely due to the broad array of food items which could be affected, Ontario has since backed down on the proposal.

Other jurisdictions have contemplated more specific, if no less ambitious, approaches. For example, a bill introduced into the California Senate in 2002 sought to tax soft drinks and redistribute the revenues raised. The Senate proposed to spend half of the money earned on public health-awareness programs, and to give the other half to school districts that agreed to stop selling soft drinks on campus. Another bill introduced in New York in June 2003, by Democratic Assemblyman Felix Ortiz, seeks to place a ¼ of one percent additional sales tax on all currently taxed food and drink, video games and video game equipment, and movie rentals, and to institute new taxes on previously untaxed items defined as “sweets or snacks.” This bill has been nicknamed the “couch potato tax,” because of its focus on both snack foods and less active forms of entertainment. In contrast to the “fat tax” approach, tax policy can also be used to encourage healthy behaviour. In Australia and the United States, this has included allowing deductions for the health club and weight-loss program memberships and the purchase of exercise equipment.

Lessons from Tobacco

The Heart and Stroke Foundation of Canada issued a release on February 10, 2004 stating, “Fat is the new tobacco.” Given the magnitude of the obesity problem, it is clear that the “battle of the bulge” can be informed by what has been learned in the tobacco arena. Since the 1960s, when research first linked smoking to cancer, governments have tried to reduce cigarette consumption and the prevalence of smoking. The regulatory instruments brought to bear on tobacco include marketing restrictions, such as limits on advertising and labelling requirements; usage restrictions, such as smoking bans in workplaces and public areas and increased restrictions on smoking by youths; excise taxation, to increase the price of tobacco products; and social marketing campaigns.

A summary of the relevant empirical literature appears to provide empirical support for the following findings:

- **Advertising bans** – These are not very successful in reducing smoking. Due to the industry’s oligopolistic nature, advertising may only shift sales among brands rather than increasing total cigarette sales. Additionally, advertising bans may increase cigarette manufacturers’ market power.

- **Warning labels** – These do appear to reduce smoking; however, it is important to have consistent messages over time, in order to maintain sustained reductions.
- **Usage restrictions** – These may affect tobacco consumption, although enforcement is very important (but costly) in reducing consumption.
- **Taxes** – These provide an economic disincentive to smoking. However, demographic outcomes differ (high- versus low-income and women versus men), and very high taxes encourage smuggling.
- **Social marketing strategies** – These include publishing health scares, and have been effective in reducing smoking. It is important to incorporate messages into schools.

The parallels between tobacco policy and health-based food policy are not perfect. This is due to the fact that there are differences in the natures of the social problems. For example, the fact that there are no significant positive or neutral health affects associated with tobacco consumption is very different than a similar consideration for fat, salt, sugar, or any of the other food-related problems. Additionally, as long as individuals engage in certain food behaviours in moderation, at certain stages of growth there are benefits associated with consumption of most food “problems.” Policies such as taxation, which may impact regressively on lower income members of society, may give rise to new concerns. Tobacco consumption reductions can directly benefit health, while food consumption changes that are not associated with activity changes may not significantly improve health. Tobacco is an addictive substance, a fact that possibly impacts the relative success of different strategies to reduce consumption. Tobacco consumption has external impacts, which is a feature not usually associated with diet-related health problems, other than indirectly through health care costs.

Existing Knowledge about the Impacts of Food Related Policies

Good examples of Canadian impact studies do not always exist. Therefore, the literature reviewed here includes examples of similar strategies undertaken in other countries. The types of actions that can be considered in order to change food system behaviour in Canada include changing agricultural policies; revising Canada’s Food Guide; creating new nutritional labelling requirements; establishing advertising restrictions; introducing “fat” taxes; and providing subsidies for healthy food choices.

Two areas in which there has been extensive research are the impacts of food advertising and social marketing on consumer behaviour. The various empirical studies reviewed here provide mixed messages. In many cases, food advertising serves as a potent tool. Generic advertising, in particular, appears to be important for a range of commodities. However, policy makers must question whether generic advertising leads to sub-optimal social results, in terms of food choices. If so, then policy makers may choose to restrict generic advertising (or any other kind of advertising) or simply choose not to implicitly subsidize it.

There is a substantive difference between the impacts of advertising on food consumption and its impacts on tobacco consumption. In many cases, tobacco advertising bans were believed to be ineffective in reducing tobacco consumption, due to a difficulty in establishing a link between cigarette advertising and aggregate cigarette sales. In the tobacco industry, most advertising is brand focused; thus, tobacco advertisements induce smokers to switch brands, but do not seem to increase aggregate consumption. However, in the food industry, there seems to be a well-established connection between brand and generic advertising and aggregate sales/disappearance of many food products (particularly when fast food restaurant sales and restaurant advertising are included). Hence, imposing restrictions on food advertising to certain groups or to society as a whole may achieve more significant impacts on behaviour than do similar tobacco advertising restrictions.

Various social marketing strategies do appear to have positive impacts. Many of the studies are conducted using focus or panel groups; therefore, some individuals have questions about how widely these messages will be adopted by the general public and for how long. It is worth noting that any serious attempts to sway aggregate population behaviour with respect to food choices will likely require media exposure that is similar to (unrestricted) media exposure for less desirable food choices. The USDA spent \$333 million on nutrition education, evaluation, and demonstrations in 1997, less than half the amount spent on advertising beer or candy or gum or breakfast cereals that year. Even though Canadian NGOs spend monies on social marketing, the statistics in this country are probably similar. In reality, it may be difficult to make the competitive messages heard.

V. Conclusions and Recommendations

This literature review is not comprehensive. The influences on food choice and nutrition are numerous and complex, and there are many roles played by governmental policy that have not been

addressed in the previous four sections. Despite this, some useful conclusions can be drawn from the information summarized here. When viewed through an economic framework of policy analysis, certain recommendations are also supported.

Economic theory suggests that government intervention into the public realm is justified in the presence of market failures. Such failures include imperfect market competition, high external costs or benefits to third parties or society in general, imperfect information, and the provision of public goods. All of these failures are evident to some extent in the market for health and wellness. In regards to food policy and health, the single most important failure is probably the lack of full information, especially on the part of consumers. The high societal costs of diseases related to food consumption are another important failure that would not be properly accounted for in the absence of interventions. In addition to the economists' traditional justifications for regulation, there are other "special" roles assumed by our government that are relevant here. The protection of children, the regulation of broadcast media, and a general interest in individual health beyond the costs imposed on society are all part of the debate regarding appropriate food and health policies.

When a lack of complete information is a large failure in the marketplace, a government can either step in directly to provide information or can impose regulations to compel manufacturers to do so. Since early in the last century, the Canadian government has played a role as both a generator and publicist of health information. This role is perhaps more important today than ever, as consumers are increasingly faced with an abundance of health reports and claims on their televisions, at their desktops, in their cars, in newspapers, and on the streets. For individual consumers, evaluating and processing these claims is a difficult and time-consuming task. At its best, government acts as a trusted voice in the fray and as an arbiter of apparently conflicting messages. In order to be effective in this, agencies must first set clear and consistent goals for what is to be communicated. Once these are decided, messages must be clear and concise. As Nestle (2000) notes, "Because dietary guidelines affect food sales, government agencies tend to phrase them in euphemisms." While this may be politically expedient, it often leaves consumers little better off than they would be without the message.

International and domestic non-governmental organizations are sometimes better positioned to formulate clear goals and messages. Many NGOs are by nature focused on a subset of health concerns, and these groups are somewhat insulated from the matters that hinder government agencies from taking strong stances that may harm key constituencies. Although NGOs can and will continue to supplement the informational role, government cannot rely solely on these disjointed messages to

promote the social good. As seen in the relative success of the “five to ten” programme promoting fruit and vegetable consumption, health promotion initiatives are most effective if government agencies come out with credible and clear messages that reinforce (or at least do not contradict) what other trusted voices are saying.

A second way for government to bridge information gaps is to compel food producers to provide nutritional information on their products. As new concerns and diet-health linkages come to light, there will be calls to expand the labelling requirements currently in place. While it is crucial that additional regulations not be imposed without regard to their cost, government should be willing to enlarge the scope of these requirements. Although some companies and industries may resist such moves, others will embrace it. Labelling requirements provide an avenue for further product differentiation, and innovative companies will find it profitable to take advantage of this.

A related issue is the regulation of producers’ health claims. On the one hand, allowing producers to advertise the beneficial effects of their products can help to achieve a healthier population. On the other hand is the concern that too many health claims will lead to consumers being swamped with useless and manipulative information. In particular, when health claims are allowed about specific ingredients, the door is opened for manufacturers to put health claims on foods that most nutrition experts would not consider healthy. The challenge for government is two-fold. First, it must not allow health claims to be used as a marketing tool if the net effect is to decrease the public health. Second, it must proceed in ways that do not lessen the effectiveness of its own health promotion messages.

Our review provides ample evidence that industry will respond to health concerns through product development and marketing. This suggests that, for many issues, promoting and standardizing information is a viable alternative for process-specific requirements. For example, a joint program that develops a clear message about the health effects of trans-fats and implements specific labelling requirements for their use may be as effective in promoting public health as the near-total ban currently being considered in Canada. Moreover, the informational route better allows for consumer choice and for the incorporation of new evidence on the health effects of trans-fat consumption. This being said, regulating processes is justified when the health effects are so great that no amount should be consumed, or when the informational barrier can not readily be overcome through labelling requirements.

Another set of tools being considered by governments around the world involves the increased use of consumption taxes to achieve health goals. Since consumers are responsive to price, these can

be effective means of lowering the consumption of undesirable food items. At the same time, taxes involve an actual redistribution of income that makes all consumers worse off. One can also label “fat taxes” as regressive because these effects will be most deeply felt by low-income families. Potato chips and fast food meals are substantively different from cigarettes, in that the latter are addictive. In moderation, healthy individuals can still consume most snack foods without jeopardizing their health; however, a fat tax penalizes the person making that choice. An alternative way to achieve a healthier dietary mix would be to subsidize the consumption of foods considered to be healthier, but this is rarely done. Although such a programme would actually be progressive, in that the largest benefits would go to those with lower incomes, any “thin subsidy” would necessarily involve new government outlays that would have to be funded by taxpayers.

In Canada, we have long made extensive use of indirect and direct subsidies, administered pricing, and regulated marketing to support some areas of agricultural production. There is also a wide variety of non-food-related policies that may affect dietary choice. Since these programs have been established in complete isolation from health policy, the net effect on public health has often been negative. This underscores the importance of inter-agency cooperation. The relevant linkages between food and health lie well beyond the purview of any one agency. This review notes areas in which current agricultural policy has unintended consequences or is in direct conflict with health goals. However, there is little empirical analysis of the impact of current Canadian agricultural policies on food choices or consumed nutrient levels. This is a fruitful area for further research. These issues can only be understood and resolved through close coordination between staff at Agriculture and Agri-Food Canada, Health Canada, and other pertinent agencies. This type of cooperation will also lead to more inclusive consideration of all relevant concerns. Those strategies that can be supported and adopted by many of the significant players (industry, NGOs, and governmental actors) will have the greatest chance of success.

Canada is well-suited to assume an international leadership role in promoting health and wellness through sensible food policy. It is a small, wealthy country with a strong and well-defined regulatory system. It also has a strong tradition of addressing a wide variety of health concerns in the public sphere. Since significant health costs are involved, better food policy is also a way for the federal government to assist provinces that are struggling with their health care costs. Although there will be costs involved in retooling our current policies, these will be mitigated somewhat by the benefits to Canada in becoming an exporter of healthy foods and healthy food policies.

Integrating Food Policy with Growing Health and Wellness Concerns: An Analytical Literature Review of the Issues Affecting Government, Industry, and Civil Society

A Report to Agriculture and Agri-Food Canada, Food Value Chain Bureau

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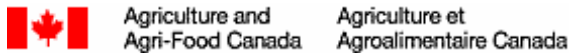
Agriculture and
Agri-Food Canada

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Agroalimentaire Canada

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Abstract

Over the past few years, there has been growing global interest in the link between food and health. This paper provides a review of some of the recent literature describing these linkages. The first section provides an overview of findings that link the consumption of fruits and vegetables, meat, eggs, whole-grains, alcohol, sugar, dairy, fish, pulses, soy, and nuts to coronary heart disease, cancer, stroke, and diabetes. The authors then summarize various international and domestic non-government organizations' views about these issues. The third section centres on the food industry and its responses to growing health concerns. The fourth section is an overview of public policy relating to food and health, including the use of food policy to change consumption behaviour and address obesity. This section also includes a discussion of the relevance of policies designed to discourage smoking to the current debate on obesity. The Conclusion highlights ways in which Canadian food policy can be adapted in order to better promote health and wellness.

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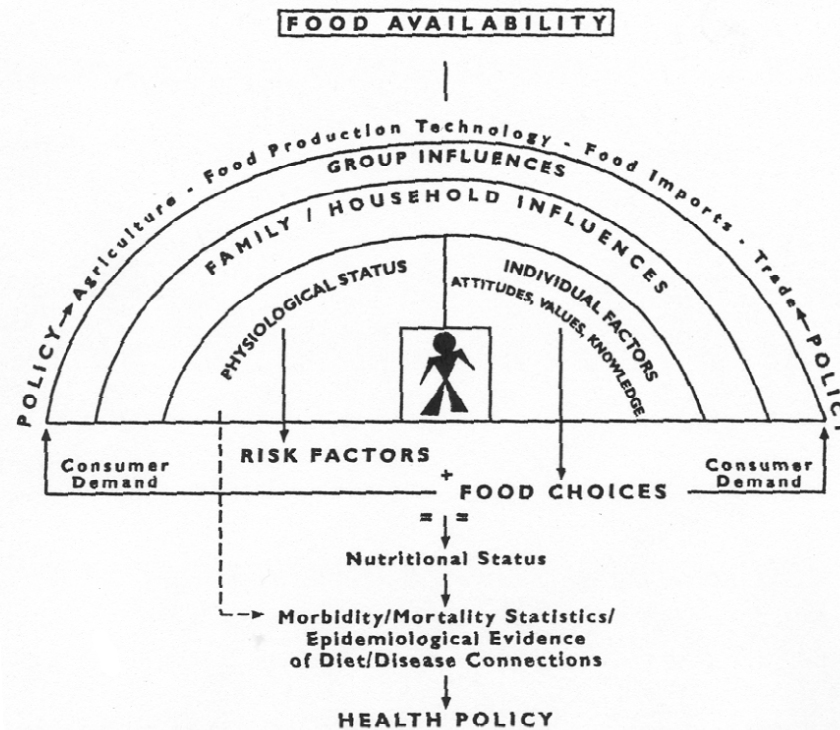
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Introduction

Over the last ten years, issues surrounding food and health have received increasing public attention in both the policy and media arenas. One of the major drivers of public policy interest in this area is an increase in health costs that are attributable to diet-related causes. Consumer food choices are complex; thus, designing effective policies to change consumer attitudes may be difficult and costly. Policy must therefore employ an integrated approach. Incentives offered to primary food producers, processors, retailers, and restaurateurs must be uniform, regulatory oversight must be consistent, and consumers must be provided with adequate information.

Consumer food choices are driven by a number of factors including individual attitudes; actions by agents in the food production, distribution, and processing sectors; social marketing; advertising; physiological status; and group behaviour. These various elements are illustrated in the diagram below.

Figure 1: Influences on Food Choices (Reprinted from Sims, 1998)



An array of dynamics affects food choices. Additionally, many Canadians want to more deeply explore the links between food choices and health. Thus, it is desirable to review the actions and recommendations that the medical profession, multinational organizations, NGOs, the food industry, and national governments have undertaken. It is also important to assess the impacts of policies that have been proposed in other contexts, such as those developed to control the use of tobacco or those that govern the agri-food distribution system. To that end, this literature review will be presented in the following order:

- I.** Part I consists of an overview of health and disease and the relationship between health and individual food consumption. Data are drawn from the medical literature. Discussion centres on a summary of various meta-analyses that link health to foods consumed.
- II.** Part II summarizes major international organizations' views about food health issues. We detail the FAO and WHO's positions on food and health and discuss the actions taken by various NGOs, including Canadian cancer and stroke organizations.
- III.** Part III focuses on the food industry. The authors provide examples of the ways in which North American food firms have responded to health issues. This section also includes a summary of major food manufacturers' product advertising activities.
- IV.** Part IV centres on public policy issues, such as the development and marketing of the Canadian Food Guide and governmental regulation of advertising for individual foods. This section is primarily concerned with the following:
 - Providing information about food-related policy tools that may be used to stimulate changes in consumption behaviour.
 - Discussing regulatory policies that other countries have proposed and adopted (e.g., trans-fat bans in Denmark).
 - Reviewing similar regulatory involvement in the tobacco arena and delineating the outcomes of various regulatory interventions.
 - Exploring various Canadian public policies and their potential impacts on dietary choices.

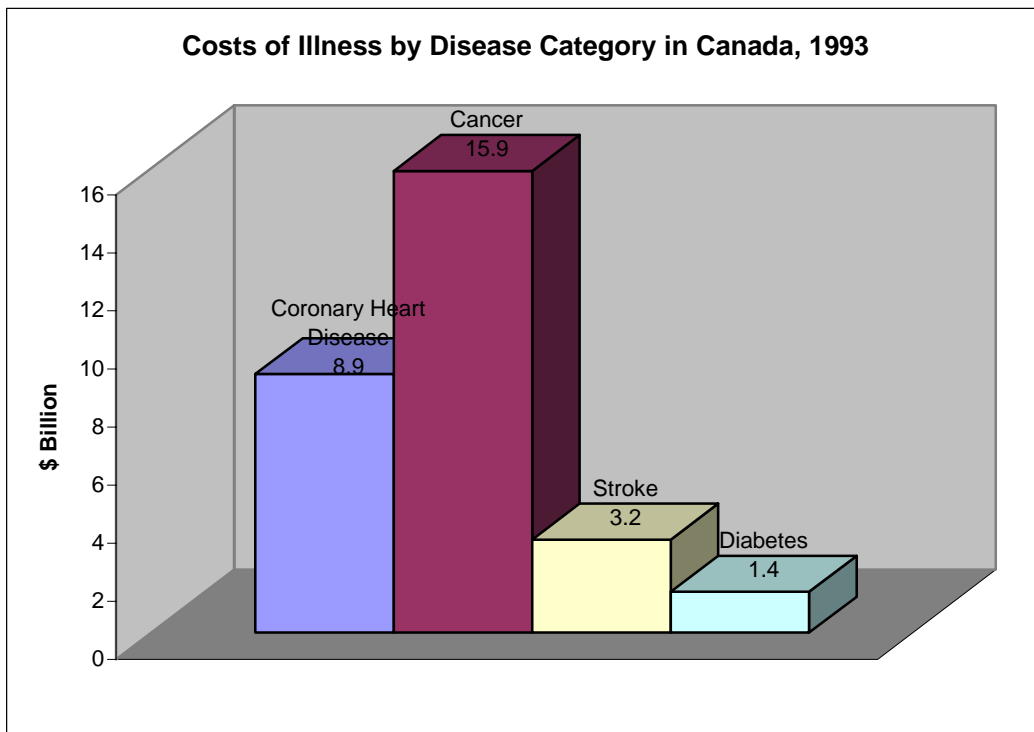
- Summarizing the relevant literature concerning consumer responses to existing programs, such as social marketing, food labelling, and advertising initiatives.

V. Part V includes a synopsis and recommendations for further research.

I. Overview of Health and Disease Issues Related to Individual Food Consumption

Considerable research has been devoted to the relationship between the intake of individual food categories and the incidence of disease. The following is a review of medical, dietetic, and public health studies and meta-analyses that pertain to these links. The authors have specifically focused on studies that concern coronary heart disease, cancer, stroke, and diabetes, given that, in 1993, these four diseases accounted for an estimated \$29.4 billion in direct and indirect health costs (in 2004 dollars), or 19 percent of all Canadian health care costs. This information is shown in Figure 2 below.

Figure 2: Costs of Certain Diseases in Canada, 1993, in 2004 Dollars

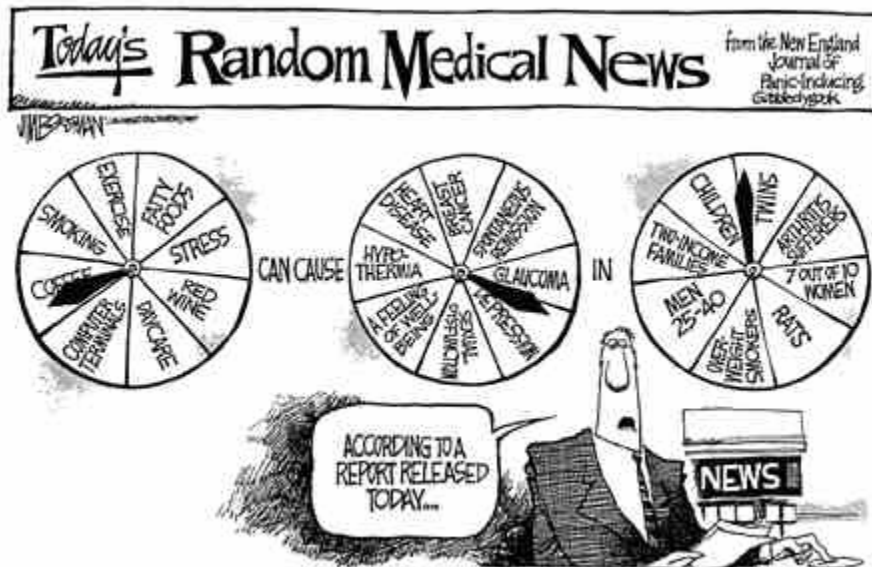


(Source: Health Canada, 1997; Bank of Canada, 2004; and authors' calculations).

The deluge of dietary advice implied by these studies often bewilders consumers and policymakers alike. The reports, as reflected in the popular press, can often seem conflicting, or may seemingly require consumers to choose from a menu of disease risks they wish to face. For example,

the consumption of ocean fish may provide important benefits in the fight against cancer and coronary heart disease, yet heavy metal pollutants in these same foods may cause nervous system and developmental problems. Although this review is far too brief to address many of these tensions, it does summarize the current knowledge about the relationships between the four diseases listed above and specific food categories of importance to Canadians. We have investigated the research linking coronary heart disease, cancer, stroke, and diabetes to the consumption of fruits and vegetables, meat, eggs, whole-grains, alcohol, sugar, dairy, fish, pulses, soy, and nuts.

Figure 3: Consumers are Faced with a Variety of Messages about Health Research (Cartoon Copyright 1997, King Features Syndicate)



A. Fruits and Vegetables

Increasing scientific evidence points to the health benefits of a diet rich in fruits and vegetables. The protective effects of high fruit and vegetable consumption have been documented in the prevention of cancer (Steinmetz and Potter, 1996; Glade, 1999); coronary heart disease (CHD) (Joshiyura *et al.*, 2001); ischemic stroke (Joshiyura *et al.*, 1999); and diabetes mellitus (Ford and Mokdad, 2001). These protective effects are attributed to active micronutrients (e.g., vitamins and minerals) and non-nutritive components known as phytochemicals. These phytochemicals exhibit a potential for modulating human metabolism in a manner favourable for the prevention of degenerative diseases.

Coronary Heart Disease

A growing body of epidemiological literature supports the notion that fruits and vegetables may play a protective role in preventing CHD¹. It is reported that increasing fruit and vegetable consumption by one-to-two servings daily may reduce cardiovascular disease risk by 30% (Silalahi, 2002). Klerk and colleagues (1998) examined this association by reviewing findings from 13 studies conducted after 1994, and estimated risk reduction for CHD to be between 20 and 40%. La Vecchia and colleagues (1998) reported that a high intake of vegetables was associated with a decreased prevalence of heart attacks and angina pectoris. The Klerk study also found that a high intake of vegetables, particularly raw and leafy green vegetables, was protective against heart attacks. Citrus fruits were the only fruits found to be protective. Other researchers have associated tomatoes and lycopene with a lower incidence of atherosclerosis and CHD (Rao, 2002); however, more research in this area is needed in order to more fully evaluate the role that lycopene performs in the prevention of CHD.

Cancer

Some of the strongest epidemiological evidence for the health benefits of fruit and vegetable consumption relates to the risk of certain cancers. A comprehensive review of worldwide research on this topic, commissioned by the World Cancer Research Fund and the American Institute for Cancer Research, reported that, “diets high in vegetables and fruits (more than 400 g/day) could prevent at least 20% of all cancer incidence” (Glade, 1999). Other researchers have estimated that plant-based diets could prevent 20 – 50% of all cases of cancer (Block *et al.*, 1992).

This protective association is most marked for cancers of the respiratory and digestive tracts (LaVecchia and Tavani, 1998; Hertog *et al.*, 1996). However, the data relating to colorectal cancer is ambivalent. Although large prospective studies published before 1997 generally support the protective role of high vegetable and fruit consumption in colorectal carcinogenesis (Phillips and Snowdon, 1985; Thun *et al.*, 1992; Shibata *et al.*, 1992; Steinmetz *et al.*, 1994), two recently published studies have not supported such a role (Michels *et al.*, 2000; Terry *et al.*, 2001). Thus, future research in this area is needed.

¹ Coronary heart disease, as discussed here, refers to the narrowing of the small blood vessels that supply blood and oxygen to the heart.

In recent years, epidemiological studies have examined the specific role that tomatoes and tomato products play in reducing cancer risk (Giovannucci *et al.*, 1995). Diet-assessment tools that can measure this role are relatively new; thus, the vast majority of reports on this subject have been published over the last decade. One of the most exciting developments in this work has been the discovery of a relationship between tomato products and a reduced risk of prostate cancer. In 2002, Miller and colleagues suggested that the benefits might be most pronounced in the protection against more advanced or aggressive prostate cancer. The study reported that in order to reduce the risks of prostate cancer it would be reasonable to recommend that, as part of a healthy dietary pattern, the general population consume approximately one serving per day, or five servings per week, of tomato products.

Also of interest are cruciferous (mustard family) vegetables of the genus Brassica. These include broccoli, cabbage, cauliflower, and brussel sprouts. Brassica vegetables contain little fat, are low in energy, and are sources of vitamins (A, C, and E), minerals (folic acid and selenium) and fibre: All of these factors have been linked to cancer protection. Cruciferous vegetables also contain a large number of phytochemicals (carotenoids; coumarins; dithiolthiones; flavonoids; glucosinolates; indoles; isocyanationates; phenols; and terpenes), agents that have been shown to protect against carcinogenesis in various *in vitro* and animal testing scenarios.

According to Silalahi (2002), a great number of epidemiological studies have shown that citrus fruit consumption is protective against a variety of human cancers. The citrus fruits analyzed include oranges, lemons, limes, and grapefruits. These fruits provide nutrients such as vitamin C, folate, and dietary fibre and other bioactive components, including carotenoids and flavonoids, that are protective against human cancers.

Stroke

Although the literature in this area is limited, there is evidence that fruit and vegetable consumption provides protection against stroke. Joshipuri and colleagues (1999) supported a protective relationship between the consumption of fruits and vegetables, particularly cruciferous and green leafy vegetables as well as citrus fruit and juice, and ischemic stroke risk. They combined data from two prospective cohort studies and reported that consuming 5.1 servings a day decreased the risk of stroke by 31%.

The policy implications of this research seem quite straightforward. Policies designed to stimulate the general population to consume fruits and vegetables would benefit the public health and greatly reduce disease-related health care costs. Educational campaigns to encourage fruit and vegetable consumption have achieved some success. However, a greater range of policies and programs targeted to food producers and consumers may prove more effective in raising consumption levels (Nestle, 1992).

B. Meat

Armstrong and Doll's 1975 survey provided epidemiological evidence of an association between meat consumption and cancer. The researchers attributed much of the international variation in cancer incidences to dietary differences, particularly variations in meat and fat consumption. The study reported high correlations between meat consumption and cancers of the colon (0.85 – 0.89), breast (0.78), uterus (0.78), prostate (0.60), and kidney (0.70). Although these findings may have arisen due to other confounding environmental factors, Armstrong and Doll's work stimulated other researchers to engage in more detailed epidemiological inquiry into this association.

Epidemiological evidence supports an association between meat consumption and modest increases in colorectal cancer risk (Norat and Riboli, 2001) and in breast and prostate cancers (Biesalski, 2002; Bingham, 1999). With less consistent results, consumption of red meat (which generally denotes beef, lamb, and pork and their by-products) has also been associated with increased risks for stomach, esophageal, pancreatic, breast, prostate, and kidney cancers (Matos and Brandani 2002). Additionally, the UK Department of Health provides some evidence of an epidemiological association between meat intake and cancers of the lung and pancreas (1998).

Colon Cancer

Colorectal cancer is the fourth most frequently occurring cancer in the world, and North America demonstrates some of the highest disease rates (Norat and Riboli, 2001). In 1996, the Colon Cancer Panel at a WHO consensus conference entitled "Nutrition in Prevention and Therapy of Cancer" concluded that, based on the experimental and epidemiological data available at that time, consumption of red meat and processed meats was likely associated with increased risk for colorectal cancer (Scheppach *et al.*, 1999). In 1997, issues of meat consumption and its relationship to colorectal

cancer became highly controversial when the World Cancer Research Fund (WCRF) singled out meat as a dietary risk factor (Glade, 1999).

Prospective studies of colon cancer have measured various indices of meat consumption. Although the majority of studies report wide confidence intervals and, therefore, non-significant results, there is evidence that red meat consumption increases individuals' risks of developing colon and rectal cancers (Bingham 1999). Norat and Riboli (2001) conducted a review of 45 studies published in English from 1970 to 1999. They considered the consumption of total meat, red meat, and processed meat and their respective associations with the risks of developing cancers of the colon and rectum. Fourteen studies reported relative risks for colon cancer only, 15 reported relative risks for colon and rectal cancers separately, and the 16 remaining studies reported relative risks for both colon and rectal cancers. In 1998, the U.K. Department of Health reported a "moderately consistent" positive association between red and processed meat consumption and colon cancer, with relative risks on the order of two associated with the intake of ten-to-twelve portions of red meat per week. Other studies have found a link between cancer and red meat if these are consumed twice a day or more or are processed (cooked or fried) (MacIntosh and Le Leu, 2001). It is known that very small amounts of carcinogenic and mutagenic agents are produced on the surfaces of overcooked meats (including red meat, pork, chicken, and fish); however, their calculated daily intakes in humans are 1000 – 5000 times smaller than those found to induce cancer in animals. This therefore fails to explain the observed association between processed meat and colon cancer.

This association has important public health implications, given that study results determine what types of recommendations are given at the population level. Two recent reports on diet recommend a reduction in meat consumption, particularly that of red meat (Glade, 1999; UK Department of Health, 1998). However, in 2002, in response to these two reports, Truswell reported that although there is a possible relationship between meat consumption and colorectal cancer, not enough evidence exists to justify making negative recommendations to the general public. Truswell conducted a review of additional epidemiological studies, published after the aforementioned reviews, that investigated the links between meat consumption and colorectal cancer, and found that of 44 studies, 31 found no association between red meat and colorectal cancer. Furthermore, although meat contains components that epidemiological and animal experiments associate with cancer formation, it also contains folic acid, selenium, zinc, and other components that researchers claim to be nutrients that act to prevent chronic diseases (Biesalski, 2002). Epidemiological evidence linking meat

consumption to colorectal cancer risk remains inconsistent, and more research is needed in order to elucidate the mechanisms through which meat may influence these risks.

Breast Cancer

Breast cancer is the most common cancer that occurs in women living in Western populations (Bingham, 1999). Research consistently links meat consumption to the development of breast cancer. Of ten studies reviewed by the UK Department of Health in 1998, all showed an elevated risk for total meat, and, in five of the ten studies, this risk was quantified as significant.

Prostate Cancer

Prostate cancer is the most common hormone-related cancer in men (Coleman *et al.*, 1993). Meat consumption has been linked with increased risk, and five of eight prospective studies have generated significant findings (UK Department of Health, 1998).

C. Eggs

Numerous studies have established that elevated serum cholesterol is an important determinant for coronary heart disease (Kannel *et al.*, 1964, Keys 1980). Consequently, recommendations to limit saturated fat and cholesterol intake have frequently included advice to limit egg consumption, as eggs are a concentrated source of dietary cholesterol. Several studies have examined egg intake and its relationship to coronary outcomes. However, all but one investigation failed to consider the role of other potentially confounding dietary factors, such as total energy intake, foods high in saturated fat, and foods high in fibre that can bias the relationship between egg consumption and coronary outcomes. When Hu and colleagues adjusted for multiple confounders, they found no association between egg consumption and incidences of coronary heart disease (1999).

D. Whole-Grains

It is notable that the scientific community often ignores the distinction between whole-grains and refined grains. For example, the US Department of Agriculture's Dietary Guidelines for Americans recommends 6 – 11 daily servings of grain products (such as breads, cereals, pasta, and rice), including whole-grain products and “several servings of whole-grain breads and cereals.” The summary that follows is an analysis of whole-grain consumption and risks for chronic diseases. It should therefore be noted that the reported associations are not applicable to the consumption of refined grains, as these are nutritionally inferior to whole-grains, and, consequently, consuming them may not reduce chronic disease risk (Jacobs *et al.*, 1998).

According to the Food and Nutrition Board Institute of Medicine (2001), dietary fibre is comprised of nondigestible polysaccharides, naturally occurring resistant starch and oligosaccharides, and lignins in plants. Whole-grains are an important source of dietary fibre and of many other nutrients that are in short supply in our diet, including digestible carbohydrates, resistant starch, trace minerals, certain vitamins, and other compounds of interest in disease prevention, including phyto-estrogens and antioxidants (Slavin *et al.*, 1997).

Coronary Heart Disease

The association between high-fibre foods and decreased risks of CHD was first strongly supported by a 1977 report by Morris and colleagues. Working men in the UK who had the highest intakes of cereal fibre were reported to have a 20% lower risk of CHD than those who had the lowest intakes of cereal fibre. Since that time, numerous other studies have confirmed these observations, and, recently, the USA and UK approved health claims suggesting that whole-grain intake may reduce the risks for CHD (Anderson, 2003).

In 2003, Anderson reviewed eight studies that assessed the association between whole-grain intake and the risks for atherosclerotic cardiovascular disease. Seven of the eight reported a negative association, and in six the negative association was significant. Data from five of these studies was combined in order to calculate a pooled estimate that indicated a 29% reduction in the risks for CHD associated with the group with the highest whole-grain intake, as compared to the group with the lowest intake. This estimate was computed using values that were adjusted for covariates such as smoking, BMI, hypertension, and supplement use.

The Iowa Women's Health Study reported a striking inverse association between whole-grain intake and the risk of death from ischemic heart disease. After adjustment for age and energy-intake, the relative risk reductions for ischemic heart disease from lowest to highest category of whole-grain intake were reported to be: 0%, 16%, 42%, 55%, and 40% (Jacobs *et al.*, 1998).

The Atherosclerosis Risk in Communities Study reported a dose-response relationship for total mortality and incident CAD across quintiles of whole-grain intake after adjustment for age, sex, race, and total energy intake (Steffen *et al.*, 2003). Subjects in the highest quintile for whole-grain intake (those who had a mean intake of three servings a day) had 23% and 28% lower risks of total mortality and incident CAD, respectively, than did those in the lowest quintile (individuals who had a mean intake of 0.1 servings per day).

Truswell (2002) reviewed five studies, and found that subjects who consumed relatively large amounts of whole-grain cereals have significantly lower rates of CHD. This protective effect does not seem to be due to cholesterol lowering.

Cancer

Jacobs and colleagues (1995) integrated 15 studies from North America and Europe, and found a strong consistency between whole-grain intake and a reduced risk for colorectal, gastric, and endometrial cancers and for coronary heart disease. Of 12 studies that assessed the relationship between colorectal cancer and whole grain consumption, 11 reported a protective effect. The one exception was a study in which the intake of whole-grain was extremely low (Centonze *et al.*, 1994). Similarly, 15 of 18 studies with mentions of colorectal and gastric cancers and whole-grain consumption reported protective effects. One reported exception was a study in which whole meal and white bread were associated with a reduced risk of gastric cancer, but crisp bread was not (Hansson *et al.*, 1993). Two studies focused on endometrial cancer, and both reported protective effects from whole-grain bread or pasta consumption.

Stroke

The evidence that associates whole-grain consumption with ischemic stroke is inconsistent. In the Nurses' Health Study, Liu and colleagues (2000) found a protective effect in female nurses, after adjustment for factors known or suspected to increase the risks of ischemic stroke. Subjects in the highest quintile of whole-grain consumption (those who had a median intake of 2.7 servings per day)

had a 31% relative risk reduction in the incidence of stroke, as compared with those in the lowest quintile (those who had a median intake of 0.13 servings per day). Liu and colleagues were the first researchers to examine the association between whole-grain intake and the risk of stroke in women, and the authors recognized potentially limited generalizability of the results to the population-at-large.

Diabetes

Accumulating evidence suggests that the consumption of whole-grains or cereal-fibres may reduce the incidence of diabetes. Several studies report that a 20 – 30% risk reduction in Type 2 diabetes is associated with high intakes of whole-grains or cereal-fibres (Salmeron *et al.*, 1997a,b; Liu *et al.*, 2000a; Meyer *et al.*, 2000). In one comparison study, women in the highest quintile of dietary fibre intake (those who had a median intake of 24.1 grams per day) were found to have a 28% lower risk of diabetes than those in the lowest quintile (women who had a median intake of 14.7 grams per day). Another study found that male health professionals in the highest quintile of cereal-fibre intake (those with a median intake of 10.2 grams per day) had a 30% risk reduction in the incidence of Type 2 diabetes, as compared with those in the lowest quintile (men who had a median intake of 1.14 grams per day).

Not all studies support the protective effects of fibre against Type 2 diabetes. In 1993, Marshall and colleagues found that reported fibre intake was higher among those who had diabetes than those who did not. They reported that a 10-gram decrease in fibre intake per day was associated with a 25% lower occurrence of diabetes. However, despite the few studies that do not support the protective effect that whole-grains and cereal-fibres play against Type 2 diabetes, the epidemiological evidence consistently supports this role. This protective association is further supported by the American Diabetes Association (Franz *et al.*, 2002), which states that whole-grains may reduce the risk of Type 2 diabetes. While public health dietary recommendations emphasize a diet high in whole-grains (Jacobs *et al.*, 1998), more research must be conducted in order to delineate the specific amounts of whole-grain needed in order to reduce the risk of Type 2 diabetes (Murtaugh *et al.*, 2003).

E. Alcohol

Coronary Heart Disease

There is a U- or J-shaped relationship between alcohol consumption and CHD. Although excessive alcohol consumption is toxic to body tissues, epidemiological studies report that low-to-moderate consumption plays a protective role against CHD. When compared to persons who consume no alcohol, individuals who imbibe the largest amounts of alcohol have the highest risk for CVD (Agarwal and Seitz, 2001), while those who consume small-to-moderate amounts each day have the lowest risks for fatal CHD (Meister *et al.*, 2000; Agarwal and Srivastava, 2001). Alcohol's cardio-protective effects have been shown to be independent of known risk factors (such as diet, smoking, and obesity) for heart disease.

Various studies have differed in their categorizations of "low-to-moderate" and "heavy" alcohol intake. The usual definition is based on the amount of pure ethanol consumed per day (Dufour, 1999; Kalant and Poikolainen, 1999). "Light-to-moderate" translates into <30 g/day of pure alcohol, and "heavy" translates into >30 g/day of pure alcohol. Other researchers have observed beneficial effects at smaller doses. For example, in a meta-analysis, Rimm and colleagues (1999) found that as little as one drink per week appears to reduce the risk of myocardial infarction. They also concluded that consumption of 30g of alcohol per day causally relates to a 24.7% reduction in the risk of developing CHD. Corrao and colleagues conducted a more recent meta-analysis (2000) and concluded that alcohol consumption of 0 to 20 g/day reduces the risk of CHD by 20%. Contrary to Dufour (1999) and Kalant and Poikolainen's (1999) classifications of alcohol consumption levels, Corrao and colleagues found evidence that alcohol intake of up to 72 g/day had a protective effect against CHD, and that it decreased risk by 4%, while consumption of >89 g/day increased the risk of CHD by 5%.

Cancer

Alcohol consumption has been linked to an increased risk of tumours of the oral cavity, pharynx, esophagus, stomach, and upper airways (Gray *et al.*, 1993 and 1992; Gonzalez *et al.*, 1994). Beer intake was first listed as a possible risk factor for lung cancer in 1984, in a literature review written by Potter and McMichael (1984). After this review was published, this potential relationship

was regarded with scepticism and was perceived as being confounded by cigarette smoking; however, recent research indicates that it has merit.

A growing body of literature suggests that alcoholic beverages may increase lung cancer risk. In 1997, the World Cancer Research Fund and the American Institute for Cancer Research asked a panel of experts to review the epidemiological evidence, and these researchers concluded that alcohol intake may “possibly” increase lung cancer risk (World Cancer Research Fund, 1997). In 2001, Bandera and colleagues conducted a literature review and presented results from 24 studies. Six of the reports noted a positive association between lung cancer and total alcohol intake. Other studies reported an association between cancer and total alcohol intake in specific subjects, such as those with low vitamin A intake (Kvale *et al.*, 1983), squamous cell carcinoma cases (Bandera *et al.*, 1997), adenocarcinoma cases (Woodson *et al.*, 1999), and in non-smokers (Breslow *et al.*, 2000). Five of the investigations reported significant dose-response relationships between cancer and total alcohol intake (De Stefani *et al.*, 1993; Dosemeci *et al.*, 1997; Pollack *et al.*, 1984; Bandera *et al.*, 1997; and Prescott *et al.*, 1999). Bandera and colleagues looked at particular beverage types and found that beer and liquor were most commonly reported as possible risk factors for lung cancer. Of 11 studies that evaluated the effects of beer, three reported a positive association, and two offered weak support. Additionally, of the 11 studies that evaluated the effects of hard liquor, five reported a positive association, and, of the eight studies that evaluated the effects of wine, two reported a positive association. Although the overall evidence is not sufficient to warrant a claim that there is a causal association between alcohol and lung cancer, the current epidemiological evidence suggests that an increased risk of lung cancer is associated with drinking alcohol, and is particularly related with consuming beer. This connection merits further investigation.

Stroke

The association between alcohol intake and stroke varies according to stroke type. For hemorrhagic stroke, this link has been found to be positive and linear, while for ischemic stroke, it has been found to be J-shaped (Camargo, 1989). While heavy drinking constitutes a risk factor for all types of stroke (Lindgard and Hillbom, 1987), light-to-moderate alcohol consumption has been reported to reduce the overall risks of stroke and the risk of ischemic stroke in men (Berger and colleagues, 1999a, b). Mazzaglia and colleagues’ 2001 review of the epidemiological literature investigated the dose-response relationship between alcohol and stroke. This review supported earlier

reports that noted a causal association between heavy drinking and stroke; however, the evidence linking light-to-moderate consumption and stroke was unclear and inconsistent.

Diabetes

Zilkens and Puddey conducted a review of the literature in 2003 and reported an association between acute and chronic alcohol use and insulin resistance, incidences of Type 2 diabetes, and occurrences of cardiovascular disease with Type 2 diabetes. The researchers found that, after stimulating a glucose load, the acute effects of alcohol induced a state of insulin resistance. Long-term exposure to alcohol was reported to be associated with improved insulin sensitivity. This review also found that light-to-moderate alcohol consumption produced a protective effect against the development of diabetes.

F. Sugar

In 2000, the U.S. Dietary Guidelines Advisory Committee (DGAC) identified foods and beverages with added sugars as contributors to escalating obesity rates (U.S Department of Agriculture, 2000). The committee also claimed that the consumption of added sugars potentially displaced other, more nutrient-dense foods from the diet. The claims in the scientific literature about this relationship are inconsistent. Some evidence supports the DGAC claim (Guthrie and Morton, 2000; Harnack *et al.*, 1999); however, other research finds no consistent association between total sugar intake and nutrient adequacy (Farris *et al.*, 1998; Gibney *et al.*, 1995). A 2001 study by Forshee and Storey claimed that added sugars have little to no association with diet quality in individuals over the age of two years. The researchers recommended that nutritionists and policy advisors focus on the quality of the total diet, rather than on added sugars. A 2003 study by Storey and colleagues also found no association between added sugars and body mass index (BMI).

Additionally, in 2003 Forshee and Storey examined the relationship between beverage consumption and BMI. After controlling for age, race/ethnicity, and family income, they reported a slight positive association between body mass index (BMI) and the consumption of diet carbonated beverages and milk. They also found a slight negative association for milk consumption in girls aged 6 – 19 (Forshee and Storey, 2003), but did not observe this association in boys. The researchers noted

that, for both sexes, no association existed between BMI and the consumption of regular carbonated beverages, regular or diet fruit drinks/ades, or non-citrus juices.

G. Dairy

Coronary Heart Disease

Given its saturated fatty acids content and the fact that it contains cholesterol, many researchers regard milk as a promoter of atherosclerosis and CHD. Although there are findings that support a correlation between milk and butterfat intake and CHD mortality, evidence from Finland and France appear to counter this evidence (Artaud-Wild *et al.* 1993). This “French Paradox,” as it is commonly known, indicates that individuals in France have a low risk of CHD, despite the fact that they consume a diet high in saturated fatty acids and cholesterol. There is no positive correlation between CHD risk and animal fat intake (Fehily *et al.*, 1993), and high milk intake is reported to be associated with a decreased ischemic heart disease risk (Shaper *et al.*, 1991). This raises the possibility that milk may have antiatherogenic bioactive components that negate the effects of saturated fatty acids and cholesterol. According to Pfeuffer and Schrezenmeir (2000), milk and milk products should be a part of a healthy diet that emphasizes cereals and vegetables.

Stroke

In 2001, Massey reviewed the literature on the association between dairy food consumption and stroke incidence (Massey, 2001). Two studies had previously examined this association, and both reported a decreased risk of stroke connected with higher intakes of dairy foods. The first was a longitudinal study with 22 years of follow-up, conducted Abbott and colleagues (1996), which found that men of Japanese ancestry with a baseline age of 55 – 68 years who did not drink milk had twice the rate of thromboembolic stroke as men who consumed two or more 240 mL glasses per day. Additionally, Iso and colleagues (1999) examined the association between the intake of Ca, K, and Mg, three minerals abundant in milk, and stroke incidence. The study reported that participants in the Nurses’ Health Study who were in the highest quintiles of Ca, K, and Mg consumption had, respectively, 28%, 29%, and 27% decreased risks of ischemic stroke as compared to those in the lowest quintile of consumption. This inverse association was stronger for dairy Ca intake than for non-

dairy Ca intake. For dairy calcium, the reductions in risk for quintiles 2 – 5, as compared with the lowest quintile were 44%, 17%, 41% and 30%. For non-dairy calcium, quintiles 2 and 4 showed an increased risk of 31% and 3%, respectively, while quintiles 3 and 5, respectively, had a 5% and 9% reduction in risk.

Diabetes

Epidemiological evidence suggests a relationship between diabetes and the intake of cow's milk. Several tests in human subjects indicate that the exclusion of cow's milk from the diet during the first few months of life prevents the onset of insulin-dependent diabetes mellitus, also known as Type 1 diabetes (Savilahti *et al.*, 1988; Yokota, 1990; Scott, 1990). A Finland-based study found that when children in their first years of life who were at risk for diabetes were fed a formula based on cow's milk, they exhibited a higher risk of developing diabetes than those children who were exclusively breastfed (Virtanen *et al.*, 1991).

In 2000, Schrezenmeir and Jagla conducted a review of the literature (Schrezenmeir and Jagla, 2000), and differentiated between Type 1 and Type 2 diabetes. They noted milk as a pathogenic agent for the former, although they were unclear about the aetiology of the latter. The researchers presented abundant evidence to support an association between the intake of cow's milk and Type 1 diabetes. Another study by Scott (1990) examined patterns of unfermented milk product consumption and Type 1 diabetes prevalence and found a significant positive correlation ($r = 0.86$). A similar positive correlation ($r = 0.96$) was reported by Dahl-Jorgensen and colleagues (1991) when they compared fluid cow's milk consumption and age-standardized incidence rates of diabetes in children 0 to 14 years of age. Two meta-analyses add further support to this association. The first, conducted in 1994 by Gerstein, synthesized the results from 13 studies and reported that individuals who were exposed to cow's milk-based nutrition before they were four months of age had a 1.5 times greater risk of developing diabetes. In 1996, Norris and Scott conducted a meta-analysis that synthesized the results from 17 studies and reported that individuals who were exposed to breast-milk substitutes at earlier than four months of age were at a 1.38 times greater risk of developing diabetes. Additionally, this risk was listed as 1.61 times higher for those who were exposed to cow's milk during a similar time period.

Epidemiological data about the association between milk and Type 2 diabetes are rare, as this subject has been studied infrequently. In a survey of the Pima Indian tribe, a population that has a high

prevalence of this disorder (Pettitt *et al.*, 1997), researchers found that after adjusting for the effects of age, gender, birth date, parental diabetes, and birth weight, individuals who were exclusively breastfed were 59% less likely to develop Type 2 diabetes, as compared to those who were exclusively bottle-fed.

H. Fish

Coronary Heart Disease

Connections that link fish consumption to CHD are inconsistent. Some studies have found that populations that consume large amounts of fish do not gain beneficial effects against mortality from CHD (Vollset *et al.*, 1985; Curb and Reed, 1985). Moreover, researchers found no association between increases in fish intake and CHD incidence rates (Ascherio *et al.*, 1995).

However, on the other hand, there is abundant evidence to suggest that fish consumption provides protective effects against CHD. In 1996, Stone reported that this effect was first noted in early studies of Greenland Eskimos (Inuit) and their Danish counterparts. The Inuit diet, which consisted of a high intake of marine sources, such as seal and whale, was found to lead to lower blood cholesterol and lower rates of CHD. Furthermore, several studies confirm that men who consume some fish per week have lower rates of mortality from CHD than do men who consume no fish (Kromhout *et al.*, 1985; Shekelle *et al.*, 1985; Dolecek and Grandits, 1991; Kromhout *et al.*, 1995). The Diet and Reinfarction Trial (DART) (Burr *et al.*, 1989) provides more strong evidence about this association. In the DART clinical trial, men who were instructed to eat fish after they had had myocardial infarctions (MI) experienced a 29% decline in all-cause mortality, when compared to men in the placebo group.

Additionally, a 30-year follow-up to the Chicago Western Electric Study (Daviglius *et al.*, 1997) found that men who consumed 35g or more of fish per day demonstrated a 38% decreased risk of death from CHD and a 67% decreased risk of nonsudden death from MI, in comparison to men who did not consume any fish. The 2002 Nurses' Health Study found an inverse association between fish consumption and CHD in women (Hu *et al.*, 2002). Researchers compared women who rarely ate fish (less than once a month) with women who consumed fish one-to-three times per month, once per week, two-to-four times per week, and over five times per week, and found that the risk of death from CHD was 21%, 29%, 31%, and 34%, respectively, lower for women in the fish consuming groups.

Cancer

Epidemiological studies suggest an inverse correlation between fish consumption and cancer incidence and mortality. Several ecological studies support this association (Armstrong and Doll, 1975; Kaizer *et al.*, 1989; Caygill and Hill, 1995; Caygill *et al.*, 1996), and an Italian study notes the clearest connection between the two (Decarli and La Vecchia, 1986). Fish has been reported to be protective against various types of cancers, including those of the oral cavity and pharynx (Notani, 1987), larynx (Notani, 1987), oesophagus (Ziegler *et al.*, 1981; Launoy *et al.*, 1998), stomach (Hansson *et al.*, 1993), colon and rectum (Willett *et al.*, 1990; Kato *et al.*, 1997; Franceschi *et al.*, 1997), pancreas (Baghurst *et al.*, 1991), gallbladder (Kato *et al.*, 1989), breast (Vatten *et al.*, 1990; Landa *et al.*, 1994; Franceschi *et al.*, 1995), ovary (Mori *et al.*, 1988), bladder (Chyou *et al.*, 1993), kidney (McLaughlin *et al.*, 1992) and thyroid (Franceschi *et al.*, 1991).

Additionally, a 1997 review by the American Institute for Cancer Research suggested that fish consumption may protect against cancers of the colon, rectum, and ovary (Glade, 1999), and, in 1999, Fernandez and colleagues reported that even a small amount of fish consumption protects against several digestive tract cancers, including those of the oral cavity and pharynx, oesophagus, stomach, colon, rectum, ovary, and pancreas. Fernandez and colleagues found no association between fish consumption and cancers of the breast, liver, bladder and thyroid. Other studies have also been unable to support a link between fish intake and breast cancer, and most studies, including the Nurses' Health Study (Stampfer *et al.*, 1987) and studies from New York (Toniolo *et al.*, 1994) and Norway (Vatten *et al.*, 1990), have shown no association between the two. Furthermore, there is little evidence linking fish consumption with prostate cancer, and several studies show no association between them (Willett, 1997; Severson *et al.*, 1989; Giovannucci *et al.*, 1993).

Stroke

Relatively little information is available describing the association between fish consumption and stroke. Several epidemiological studies have examined this relationship and have found an inverse relationship. The Zutphen Study calculated a hazard ratio of 0.49 for men who consumed an average of 20 grams of fish per day, as compared with those who consumed less (Keli *et al.*, 1994). The U.S. National Health and Nutrition Examination Survey (NHANES) Epidemiological Follow-up Study found similar results (Gillum, 1996). This study claimed that white females who consumed fish more

than once per week had an age-adjusted incidence of stroke that was half of that reported in women who did not consume any fish. In contrast to these findings that noted protective effects, both the Chicago Western Electric Study (Orencia, 1996) and the Physicians' Health Study (Morris *et al.*, 1995) failed to find any association between reported fish intake and stroke incidence.

I. Pulses

Pulses, such as beans, chickpeas, and lentils, are protein sources that are cholesterol-free, virtually devoid of fat, and are good sources of dietary fibres, carbohydrates, calcium, and iron. They appear to reduce the risks for cancer, coronary heart disease, diabetes, and obesity (Geil and Anderson, 1994). Most scientific evidence in favour of pulse consumption in decreasing cancer risk does not present pulses as possessing any particular advantage over other plant foods. Rather, the health benefits appear to result from pulses' low fat and dietary fibre-rich content. Additionally, among the numerous starchy foods available, pulses present the lowest glycemic index, and this makes them a valuable source of energy for diabetics (Leterme, 2002). For coronary heart disease, pulses reportedly contribute to lowering plasma cholesterol levels (Anderson *et al.*, 1984; Shutler *et al.*, 1989, Kingman, 1991). Pulses are also useful in weight reduction, and they help to control obesity by increasing fullness after meals (Grieger, 2001).

J. Soy

Commonly consumed soy products include tofu, soymilk, and miso. The recent trend towards vegetarianism has also seen the introduction of new soy products, such as soy burgers, soy cheese slices, and soy yoghurt. Soy food consumption appears to be more desirable than the use of soy protein powders or soy isoflavone pills. Some researchers are concerned that the use of soy supplements may lead to consumption of unsafe mega-doses of isoflavones, which may have an adverse effect on the health of certain subgroups of the population, such as women with oestrogen receptor-positive tumours (Messina and Erdman, 2000). Burke and colleagues (2000) state that one serving a day of soy foods is conducive to optimal health.

Soy Protein

Coronary Heart Disease

The evidence for a relationship between dietary soy protein and decreased CHD risk is strongest in animal studies. Since the early 1940's, scientists have used animal studies to investigate the effects of soy protein on blood cholesterol concentrations (Kristchevsky, 1995), and have found that soy protein plays a role in lowering blood cholesterol levels. Studies in humans, however, have produced less consistent results.

There exists some support for a hypocholesterolemic effect of soy protein in humans. In 1967, Hodges and colleagues reported that substituting animal protein with soy protein produced a decrease in serum cholesterol concentrations. During the past 20 years, these findings have been supported by various researchers (Carroll and Kurowska, 1995; Sirtori *et al.*, 1995). In 1995, Anderson and colleagues conducted a meta-analysis of the literature pertaining to humans. They analyzed 38 controlled clinical trials and reported that the available data suggested a hypocholesterolemic effect for soy protein. Consumption of soy protein was associated with a 9.3% decrease in total cholesterol, a 12.9% decrease in low-density lipoprotein (LDL) cholesterol, and a statistically insignificant 2.4% increase in high-density lipoprotein (HDL) cholesterol. Soy protein intake in these studies was, on average, 47 grams per day, and 37% of the studies used 31 grams per day or less.

Additional studies, however, have not supported the original findings in animals (Gooderham *et al.*, 1996; Grundy and Abrams 1983; Holmes *et al.*, 1980; Jacques *et al.*, 1992; Shorey *et al.*, 1981). Although the reasons for these variable findings remain unclear, some explanations include variations in the ages and genetics of the human study subjects, in the fatty acid profiles and cholesterol contents of the soy protein-based diets, and in the amount of soy protein consumed. In 1996, Potter and colleagues contended that biologically active components in soy protein preparations, such as isoflavones, may provide confounding effects. Limited evidence suggests that isoflavones have an independent and favourable effect on blood cholesterol concentrations in nonhuman primates and humans (Anthony *et al.*, 1996; Balmir *et al.*, 1996).

Despite this ambiguity, the research that links soy consumption to the prevention of heart disease has prompted the U.S. Food and Drug Administration (FDA) to place the following statement on soy food packages: "Diets low in saturated fat and cholesterol that include 25 grams of soy protein a day may reduce the risk of heart disease." Those individuals who have elevated levels of blood cholesterol may achieve an intake of 25 to 30 grams of soy protein by consuming two-to-four servings

of soy foods per day. Furthermore, in its guidelines, The American Heart Association has described the cholesterol-lowering effects of soy protein and has encouraged the use of soy foods (Erdman, 2000).

Soy Isoflavones

Isoflavones are a group of phytochemicals, which are non-nutritive substances found in plants that offer health protective effects. Soybeans are the only food source that contains isoflavones.

Breast Cancer

There is considerable evidence to support an association between increased consumption of soy-based foods and a decreased risk for developing breast cancer. Epidemiological research reveals that women in China and Japan have a four- to six-fold lower risk of developing breast cancer than do women living in the industrialized Western world (Zava and Duwe, 1997). This lower risk has been attributed, in part, to the Asian diet, which is low in fat and high in soy isoflavones (Messina *et al.*, 1994). Migration studies have shown that when Asian women have adopted a Western diet and have resided in the United States for several generations, their breast cancer incidence rates approach those of white women (Zava and Duwe, 1997). In 1991, Lee and colleagues conducted a study on diet and breast cancer risk in pre-menopausal women, which indicated that animal proteins and red meats were associated with increased risk, while soy protein was protective.

Despite convincing evidence about the protective effects of soy foods against breast cancer risk, there is insufficient evidence available to make recommendations to the public. The implementation of large-scale, long-term, prospective clinical trials is needed in order to prove that soy isoflavones are anticarcinogenic. However, due to the expensive and time-consuming nature of these trials, they have yet to be conducted.

Prostate Cancer

The research concerning diet and prostate cancer is in its infancy. Emerging epidemiological evidence reveals that, in prostate cancer, soy isoflavones appear to act as anticarcinogens. There are striking differences in prostate cancer rates in different regions of the world. Migration data indicate

that this variation is not due to genetic differences, but to cultural dietary differences. For example, in Japanese males, the number of new cases of clinical prostate cancer is 10 to 15 times lower than in white males living in the U.S. (Messina, 1999). Researchers are currently investigating the chemopreventive properties of soy. In the USA, the National Cancer Institute sponsored a workshop titled “New Clinical Strategies in Prostate Cancer Prevention,” where it was reported that soy isoflavones are currently being evaluated as a promising chemopreventive agent (Tolcher *et al.*, 2001). Hebert and colleagues found a strong inverse relationship between soy product intake and prostate cancer mortality in 42 countries for which soy intake data were available (Hebert *et al.*, 1998). In contrast, Nagata failed to find a relationship between total soy or isoflavone intake and prostate cancer mortality (Nagata, 2000). However, Nagata’s investigation was limited, and studied a relatively narrow range of soy intake — the lowest and highest levels of consumption were 21 and 35 mg isoflavones/day, respectively — which may have hindered the researcher’s ability to identify protective effects.

K. Nuts

Coronary Heart Disease

During the past decade, it has become apparent that nut consumption has a strong, beneficial effect on CHD risk (Hu and Stamfer, 1999). In a 2001 literature review, Kris-Etherton and colleagues summarized the evidence for the cardioprotective effect of nuts (which were defined as almonds, brazil nuts, cashews, hazelnuts, macadamia nuts, pecans, pistachios, walnuts and legume peanuts). They pooled the evidence produced by five large epidemiological studies including the Adventist Health Study, the Iowa Women’s Health Study, the Nurses’ Health Study, the Cholesterol and Recurrent Events (CARE) Study, and the Physicians’ Health Study. Researchers found that men and women who consumed a one ounce serving of nuts more than five times per week had an 18 – 57% decreased incidence of CHD, in comparison to subjects who never consumed nuts. This inverse association persisted after researchers adjusted for all possible confounding factors (such as age, sex, race, and dietary and lifestyle variables), thus suggesting that nut consumption represents an independent beneficial effect on CHD, with a reduction rate of 18 – 51%.

In 2002, Feldman conducted a review of the literature pertaining to the beneficial relationship between walnuts and CHD. Feldman summarized the evidence generated by five intervention studies

that included approximately 200 subjects who represented the 51% of the adult population in the United States that is at risk for CHD. The intervention trials consistently demonstrated that walnuts, as part of a heart-healthy diet, lowered blood cholesterol concentrations. Results were achieved with intakes of two-to-three daily servings of walnuts, and were supported by several large prospective observational studies in humans. All of these studies demonstrated a dose response-related inverse association between the relative risk of coronary heart disease and frequent daily consumption of small amounts of nuts, including walnuts.

Table 1: Study Counts of Associations between Foods and Diseases

	CHD			Cancer			Stroke			Diabetes		
	P	NE	D	P	NE	D	P	NE	D	P	NE	D
Fruits and Vegetables	16			8	2		2					
Meat					34	82						
Eggs		1										
Whole Grains	15	1		29	4		1			3		1
Alcohol (Moderate Consumption)	5				5	25	2	1		1		
Sugar												
Dairy	3						2					11
Fish	8	3		24	6		2	1				
Pulses	3			1								
Soy Protein	41	5										
Soy Isoflavones				4	1							
Nuts	11											

P = Protective; **NE** = No Effect; **D** = Detrimental

II. The Multilateral and Non-Governmental Organizational Perspective

A. Multilateral Organizations

Two multilateral organizations—the Organization for Economic Cooperation and Development (OECD) and the World Health Organization (WHO)—have shown significant interest in health issues. The OECD is an organization that has 30 members, who represent countries with developed economies. Its main health focus is on the costs and sustainability of health systems in member countries. As such, it centres on developing health accounting systems that assist in the monitoring and management of modern economies' health programs (OECD, 2004).

The World Health Organization, which sometimes produces documents jointly with FAO, the United Nations' Food and Agriculture Organization, is a member organization of the United Nations, and represents countries at varying stages of the development cycle. It has long held the view that nutritional well-being maintains a fundamental role in health and human development, and its key activities include nutrition promotion and the prevention and reduction of malnutrition. Accordingly, the WHO has been directly involved with the relationship between nutrition and human health.

The following is a summary of recent WHO statements concerning important interactions between health, diet, and public policy. The WHO believes that nutrition is a major and modifiable determinant of chronic disease. A 2003 WHO report states the following:

[E]vidence increasingly support[s] the view that alterations in diet have strong effects, both positive and negative, on health through life...[D]ietary adjustments may not only influence present health, but may determine whether or not an individual will develop such diseases as cancer, cardiovascular disease and diabetes much later in life. (Joint WHO/FAO, 2003, 2)

Although this statement focuses on diet, many WHO recommendations centre on physical activity and cardiovascular fitness, due to a concern that low energy expenditure acts as a major factor in the global surge in overweight and obesity. Additionally, the WHO believes that exercise influences body composition, influences the risk and pathogenesis for several chronic diseases, and significantly impacts the health effects of overweight and obesity (Joint WHO/FAO, 2003, 3).

The WHO approaches the issue of chronic disease prevention by focusing on the cumulative risks and intervention opportunities that an individual is afforded over his/her lifetime. Identified

developmental stages include foetal development, infancy, childhood and adolescence, adulthood and older people. Factors relevant for each of these stages are indicated below (WHO, 2002a, pp.31 – 41):

1. **Foetal development.** Risk factors are the following:

- a. Intrauterine growth retardation.
- b. Premature delivery.
- c. Over nutrition *in utero*.
- d. Intergenerational factors.

Three of the four factors appear to be related to future risks for chronic heart disease (CHD), stroke, diabetes, and raised blood pressure. Indeed, even intergenerational factors are considered to be related to diet, given that the WHO believes that, “[Y]oung girls who become stunted women are more likely to give birth to low-birth-weight babies who are then likely to continue the cycle...”

2. **Infancy.** Retarded growth and excessive gains in weight or height can lead to chronic disease later in life.

3. **Childhood and adolescence.**

- a. Shortness of stature, along with a measure of socio-economic deprivation, is believed to be associated with a range of chronic diseases later in life, including CHD, stroke, and possibly diabetes. This reflects an association between childhood under-nutrition and the infectious disease load that an individual carries. Higher blood pressure represents a chronic risk that appears to be related to childhood obesity.
- b. The WHO identifies three risk factors in adolescence that impact chronic diseases. These include:
 - i. Developing risk factors during this period of life;
 - ii. Tracking these risk factors through life; and
 - iii. Establishing healthy or unhealthy habits that persist through life. The WHO is concerned about the fact that unhealthy lifestyle habits are often developed during adolescence, and that these often remain with an individual throughout his/her lifetime. Some of these habits are diet-related,

some are exercise-related, and some are related to the use of tobacco or alcohol.

4. **Adulthood.** The WHO identifies several key issues for this group:
 - a. The extent to which risk factors continue to be important in the development of chronic disease;
 - b. The extent to which modifying these risk factors makes a difference in the risks of a disease emerging; and
 - c. Whether risk factor reduction can aid in the prevention and treatment of chronic disease.

While there are associations between the risk of chronic disease and a number of risk factors, the best established links are those between the risks of cardiovascular disease and diabetes and adult risk factors such as tobacco use, obesity, physical inactivity, high cholesterol, high blood pressure, and alcohol consumption. Most, but clearly not all, are due to or related to dietary issues.

5. **Ageing and older people.** This group is defined as those persons aged 60 years and older. Most chronic diseases are present during this period of life, and, in the WHO's view, are the result of an interaction between disease processes and losses in physiological functions. Cardiovascular disease, diabetes, and some cancers peak during this period. However, contrary to earlier studies, which suggested that behaviour modification is largely unproductive at this stage of life, the WHO now believes that older people benefit from healthy diets (those that are as large and varied as possible and allow them to maintain their weight) (WHO, 2002a, 40) and continued exercise, both of which lead to large reductions in cardiovascular risk.

The WHO's recommendations for dealing with chronic diseases, including excess weight gain and obesity, follow a similar pattern. These recommendations stress a combination of healthy eating, exercise, and weight control. Of these, weight control is central, and is related both to the types and amounts of foods consumed. Another is the long-term effect, something that begins in very early life, of risk factors such as diet, over- and even under-weight, tobacco use, excessive alcohol use, and lack

of physical activity. While mitigating these risk factors in later life has important health benefits, the risks of chronic disease are said to increase when these risk factors are present during any stage of life.

WHO Diet and Health Recommendations over Time

Table 2 shows that the interaction between diet and health is evolving rapidly. As a United Nations organization, the WHO has, for many years, commissioned or reviewed literature on diet and health. The differences between the 1990 and 2002 recommendations likely reflect the emerging nature of the research base that links the two issues. However, the difference in the WHO's recommendations also appears to reflect a decreased level of attention to issues of food inadequacy and a shift in focus toward issues of appropriate food selection. The perception appears to be that most of the countries of the world are able to provide adequate diets, at least in terms of calories. Thus, the WHO's recommendations increasingly focus on the particular foods that make up these diets, rather than on issues of calorie or protein deficiency.

Hence, the 1990 focus on dietary deficiencies in protein-energy, iodine, fluoride, vitamin B-12, rickets, ascorbic acid, or trace elements is largely absent in 2002. In its place is a markedly enhanced focus on obesity and diabetes, with a corresponding emphasis on limiting the intake of high energy, low nutrient foods; advocating for breastfeeding; encouraging physical activity; and ensuring adequate intakes of fibre. Additionally, the 2002 recommendations focus on dental disease and osteoporosis, both of which are believed to be diet-related. The WHO continues to place emphasis on cardiovascular disease, but shifts away from its 1990 outlook, which heavily focused on cholesterol control. While the 1990 view of cardiovascular disease does not appear inconsistent with that taken in 2002, the recent recommendations centre on lifestyle effects, not only among aging adults, but also throughout a person's lifetime.

Finally, cancer recommendations continue to be a mainstay of the WHO view of food-related health risks. In both 1990 and 2002, the WHO listed tobacco use, obesity, and diets high in meat and milk fats as important risk factors. The 2002 recommendations strongly emphasize obesity and lack of physical activity. Additionally, animal and dairy fats continue to be listed as risk factors. Moreover, in 2002, the WHO provided specific recommendations for mitigating the risks of specific cancers. These recommendations have become increasingly focused on particular cancer types, probably due to the changes in the research base between 1990 and 2002.

Table 2: Comparison of 1990 and 2002 World Health Organization Diet and Health-related Recommendations

	1990 Recommendation	2002 Recommendation
Protein-energy Malnutrition	Mentioned as a developing country issue	Mentioned, but with only slight emphasis
Iodine Deficiency	Noted as being specific to certain regions and to some persons in affluent regions who limit their intakes of iodized salt	Slight reference only
Vitamin A Deficiency	Listed as a problem in Asia, parts of Africa, and South America	Slight reference only
Iron Deficiency	Causes anaemia due to low iron absorption from plant sources and due to a lack of animal source foods	Focus is on excess animal food consumption
Fluoride Deficiency	Associated with a lack of fluoride in water, or a lack of fluoride additives to salt, milk, or toothpaste	Slight reference only
Vitamin B-12 Deficiency	Causes anaemia, neurological disorders, and is of concern with diets that contain no animal foods	Focus is on excess animal food consumption
Rickets	Caused by inadequate sunlight and a lack of Vitamin D	If mentioned, done so only in passing
Ascorbic Acid Deficiency	Drought-affected areas of Africa	If mentioned, done so only in passing
Trace Element Deficiency	Lists zinc as an example	If mentioned, done so only in passing
Obesity	<p>* States that cardiovascular disease will become a world problem by year 2000</p> <p>* Links obesity to the use of animal fat and sugars, and ties it to stage of economic development.</p>	Associated with high intake of energy-intensive, micronutrient-poor foods; home and school environments; fast-food outlets; sugar-sweetened beverages; socio-economic conditions (especially for women in high income countries); lack of breastfeeding; lack of physical activity
Diabetes	Slight reference only	Maintain weight in lower range of optimum BMI; engage in moderate or greater physical activity; limit saturated fat intake; take in adequate amounts of fibre via wholegrain cereals, legumes, fruits, and vegetables

	1990 Recommendation	2002 Recommendation
Cardiovascular Disease (CVD)	<ul style="list-style-type: none"> * Recommendations include controlling obesity * Coronary heart disease (which is the main CVD issue cited) is associated with cholesterol level * Notes a high correlation of CHD with saturated fat intake * Cholesterol risk factors include being overweight, drinking alcoholic beverages, smoking, and physical inactivity * Dietary fibre appears to help limit cholesterol levels 	<ul style="list-style-type: none"> * Notes that risk factors for CVD have a 'lag-time' effect on health through inappropriate nutrition, inadequate physical activity, and increased tobacco consumption * Cites evidence about the effects of lifestyle factors (particularly fat intake and physical activity)—such as consumption of fruits and vegetables, sodium and potassium intake, fibre intake, fish consumption, and alcohol use—on CVD
Cancer	<ul style="list-style-type: none"> * Notes that the relationship between specific diets and certain cancers is less well established than with CVD * Comments on likely diet-related risk factors for cancers of mouth and throat (alcohol and tobacco); cancer of stomach (smoked and salt-preserved foods); colorectal cancer (high fat foods, lack of dietary fibre); liver cancer (possible alcoholic beverage risk factor); lung cancer (smoking, but intake of green and yellow vegetables may act as an inhibitor); breast cancer (diets high in milk and beef fats); prostate cancer (increased weight, obesity) 	<ul style="list-style-type: none"> * States that relationships between risk and diet appear to be better understood than in 1990 * Risk factors include: Cancers of mouth and throat (alcohol, tobacco, and obesity are risk factors); stomach cancer (high intakes of salted food, although risk is decreased by a high intake of fruits and vegetables); colorectal cancer (obesity, physical inactivity, diets high in animal fats and low in fibre); liver cancer (excessive alcohol intake is main diet-related factor); pancreatic cancer (overweight, obesity, high intakes of meat appear to be risk factors); lung cancer (tobacco is a main risk factor, dietary inhibitors less well known); breast cancer (physical inactivity and restricted dietary intake in early life may play some part); endometrial cancer (obesity); prostate cancer (red meat, dairy products and animal fat are often cited as risk factors, but data are inconsistent; tomatoes are cited as an inhibitor, but data are inconsistent); kidney cancer (increased weight and obesity cited as risk factors)
Dental Disease	Not specifically identified	<ul style="list-style-type: none"> * Diet risk includes sugars * Starches are low risk for dental caries Foods with protective properties include cow's milk and wholegrain foods * Breastfeeding is associated with a low level of dental caries * Dental erosion is associated with soft drinks and acidic beverages
Osteoporosis	Not specifically identified	Diet appears to have a moderate relationship, but calcium and vitamin D are important, as is physical activity
<p>Sources: <i>Diet, Nutrition, and the Prevention of Chronic Diseases: Report of a WHO Study Group</i>. WHO Technical Report Series 797. Geneva: 1990 and <i>Diet, Nutrition, and the Prevention of Chronic Diseases. Report of a Joint WHO/FAO Expert Consultation</i>. WHO Technical Report Series 916. Geneva: 2003.</p>		

The synopsis of the WHO position on integrated prevention of non-communicable diseases (WHO, November 2003) is expressed in specific recommendations that include:

- Limiting energy intake from fat and shifting consumption from saturated and trans-fatty acids to unsaturated fats;
- Increasing consumption of fruits, vegetables, legumes, whole grains, and nuts;
- Limiting the consumption of free sugars;
- Limiting salt and ensuring that it is iodized;
- Achieving energy balance for weight control;
- Engaging in adequate levels of physical activity throughout the life course;
- Controlling tobacco use.²

The WHO describes the various levels of government responsibility for achieving the above outcomes. It states that, at the country level, governments need to develop national strategies around diet and physical activity, and that they need to establish dietary and physical activity guidelines; conduct education, communication, and public awareness (social marketing) campaigns; develop appropriate approaches to deal with the marketing of food to children; create effective labelling; and monitor health claims. In order to promote healthier food choices, the WHO encourages governments to consider the use of market incentives for developing and marketing healthier foods, reducing the salt content of processed foods, restricting the hydrogenation of oils, and limiting the excess sugar content of beverages. The WHO also says that governments can also use price policies to encourage healthy eating and physical activity, taxes to increase or decrease the consumption of food, and subsidies to promote access to recreational and sporting facilities. Food programs and agricultural policies should encourage healthy eating (for example, by increasing the production of healthy foods). The WHO report also provides further recommendations about NGOs' activities, and encourages them to lead movements to advocate for healthy diets and support the dissemination of information on disease prevention through healthy diets and physical activities. In the private sector, the WHO suggests that companies limit the levels of saturated fats and trans-fatty acids in foods, minimize the levels of sugar and salt in existing products, continue to develop healthy products, follow responsible marketing

² At the time of this writing, the WHO had recently released its final *Global Strategy on Diet, Physical Activity and Health* (2004). The recommendations included here are from an earlier draft of this document. The final report was not reviewed for this survey.

practices (especially those targeted to young children), and implement simple, clear, and consistent food labelling practices.

B. Non-Governmental Organizations

In Canada, there are a number of non-governmental organizations (NGOs) that engage in research, policy advocacy, and public education about the relationship between health and diet. Many NGOs' views are similar to those expressed by the WHO; however, in several of the examples listed below, the NGO involved has published evidence about a statistical relationship between risk factors and the likelihood of developing particular chronic diseases. Table 3 summarizes these issues for a number of Canadian NGOs, and is based on press releases that the various organizations have disseminated.

Table 3: Diet- and Health-Related Policy Positions of Canadian Non-Government Organizations

Organization	Malady	Perceived Diet Link
Canadian Cancer Society	Breast, Colon, Stomach, Mouth, Liver, Pancreatic and Prostate Cancers	<ul style="list-style-type: none"> * Up to 30 percent of cancer is related to what is eaten * Time serves as a major constraint to healthy eating, and this is particularly an issue for women between the ages of 25 and 45 * Evidence strongly suggests that consumption of a variety of vegetables and fruits as part of a healthy diet can reduce the incidence of cancer and cardiovascular disease * A lack of knowledge about serving sizes presents a major impediment to building better diets
Canadian Cancer Society; Heart and Stroke Foundation of Canada; Canadian Produce Marketing Association	Cancer and Cardiovascular Disease	<ul style="list-style-type: none"> * Evidence suggests that fruit and vegetable consumption can reduce the incidence of cancer by more than 20 percent and can also reduce cardio deaths * Cardio disease is noted as being responsible for 38 percent of total deaths in men and 35 percent of deaths in women in Canada * The organizations that participate in a joint public awareness program that is designed to encourage consumption of a variety of fruits and vegetables ("5 to 10 a day... Are you getting enough?")
Heart and Stroke Foundation of Canada	Obesity	<ul style="list-style-type: none"> * Obesity is currently a danger on a par with the risk that tobacco presented 30 years ago * Almost half of Canadians are overweight or obese, and two-thirds

Organization	Malady	Perceived Diet Link
		smoke or are overweight
	Obesity (continued)	<p>Policy suggestions include:</p> <ul style="list-style-type: none"> * Restricting distribution and advertising of junk foods (foods that are energy-dense and nutrient poor) * Ensuring that healthy choices are available in restaurants, and restricting access to junk foods and soft drinks in schools * Using public policy to encourage physical activity, and pushing urban planning initiatives that support physical activity, promoting daily physical education in schools and encouraging the public health system to address overweight and obesity issues
	Heart Disease and Stroke Diabetes High Blood Pressure Elevated Blood Cholesterol Some Cancers	<ul style="list-style-type: none"> * Carrying extra weight (as little as several pounds) increases the risk for developing each of these maladies * Small diet modifications (such as the inclusion of more fibre) can ease these risks, and may also reduce obesity
	Childhood Obesity Type 2 Diabetes in Children Cardiovascular Disease	<ul style="list-style-type: none"> * These are related to consumption of a high calorie diet, inadequate physical activity, low consumption of vegetables and fruits (i.e., 2002 Annual Report indicates that only 20 percent children, ages 6 – 12 years consume the recommended daily amount of vegetables and fruit) * Canadian children are at high risk
	Cardiovascular Disease in Women	Risk factors include tobacco use, high blood pressure, high cholesterol, and obesity
Heart and Stroke Foundation; Canadian Cardiovascular Society	Cardiovascular Disease	Major risk factors include a lack of fresh fruits, whole-grains and vegetables; diets high in saturated fat and cholesterol; alcohol (moderate levels are ok); smoking; and lack of weight control
Canadian Lipid Nurse Network	Obesity and Associated Effects	<ul style="list-style-type: none"> * Causes are believed to be increased sedentary activity and an availability of high energy, high fat foods * Associated effects of obesity in youth include hyperlipidemia, abnormal glucose tolerance, sleep apnoea, hypertension, orthopaedic complications and psychosocial difficulties
	Type 2 Diabetes	<ul style="list-style-type: none"> * This malady is largely preventable through body weight control that is associated with healthy eating and activity * Healthy eating is defined as diets that also lead to a lower risk of cardiovascular disease and certain

Organization	Malady	Perceived Diet Link
		cancers
Canadian Association of Cardiac Rehabilitation	Congestive Heart Failure	Dietitians work to: <ol style="list-style-type: none"> 1. Reduce myocardial workload, by lowering sodium intakes, reaching/maintaining healthy body weight, and restricting fluids 2. Use diet to manage co-morbidities such as diabetes 3. Improve patients' nutrition status 4. Modify other behaviours, such as advocating for smoking cessation, diet change, and adherence to medications
National Institute of Nutrition	Heart Disease, Cancer, Diabetes, and other Disorders	Focuses on advocacy for nutrition labelling, types of labelling, and on following food guide recommendations
Dietitians of Canada	Individuals' Health	Unhealthy food intake is a problem, given that children and youth have ready access to high calorie foods such as soft drinks, potato chips, and candy, which can lead to a problem in youth and child obesity

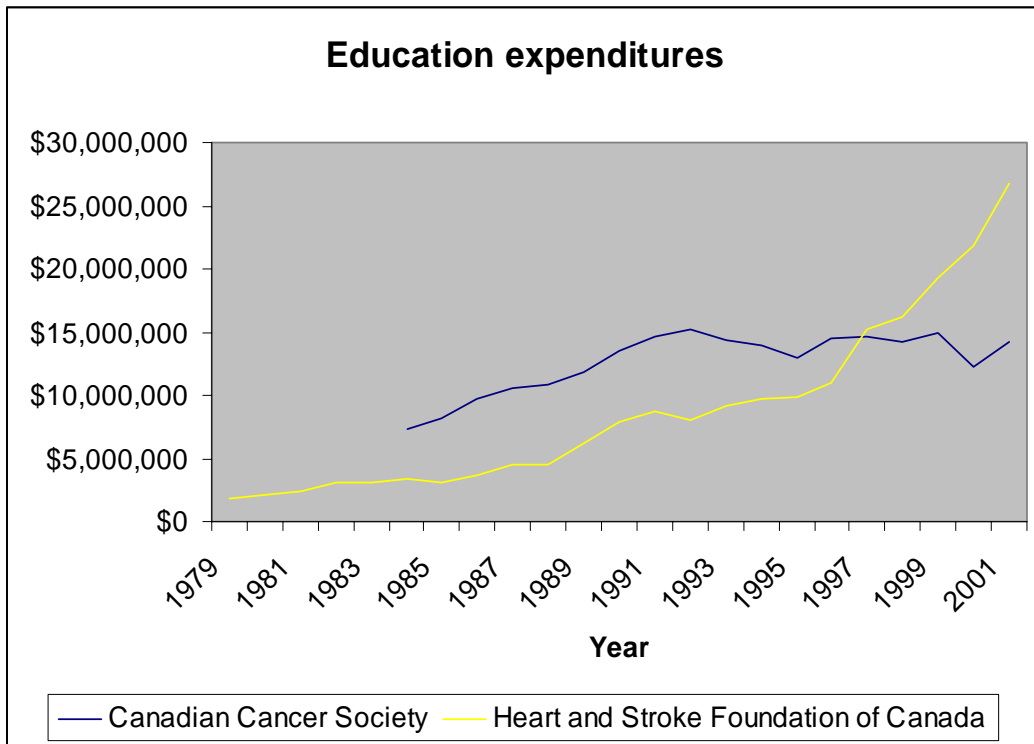
In all cases, the organizations (several of which represent medical professionals—see Appendix A) hold strong and relatively consistent views about the links between diet and disease. For example, several of the organizations surveyed here promote the idea that many cancers are diet-related, or that diet, at a minimum, predisposes individuals to certain types of cancers. The way in which the corresponding policy statements are framed suggests that the organizations view added public information as crucial. The “5 to 10 a day...Are you getting enough?” public awareness program, funded by the Canadian Cancer Society and the Heart and Stroke Foundation, in cooperation with the Canadian Produce Marketing Association, is an example of this. The Heart and Stroke Foundation (HSFC) goes further by making policy suggestions that are designed to restrict access to “bad” foods, encourage access to “good” foods, and require persons to engage in increased physical activity. The manner in which these policies are presented does not indicate that these are the organizations’ strongly held policy views, but that these NGOs mean to suggest that there are alternatives available.

Nevertheless, it is important to note that these recommendations reflect a level of dissatisfaction within some of the organizations that sponsor additional consumer information. The HSFC and the Dietitians of Canada appear to be concerned about overconsumption of certain foods,

and both outline a view, perhaps only an emerging one, that this issue requires the institution of stronger measures and cannot stop with merely providing public information.

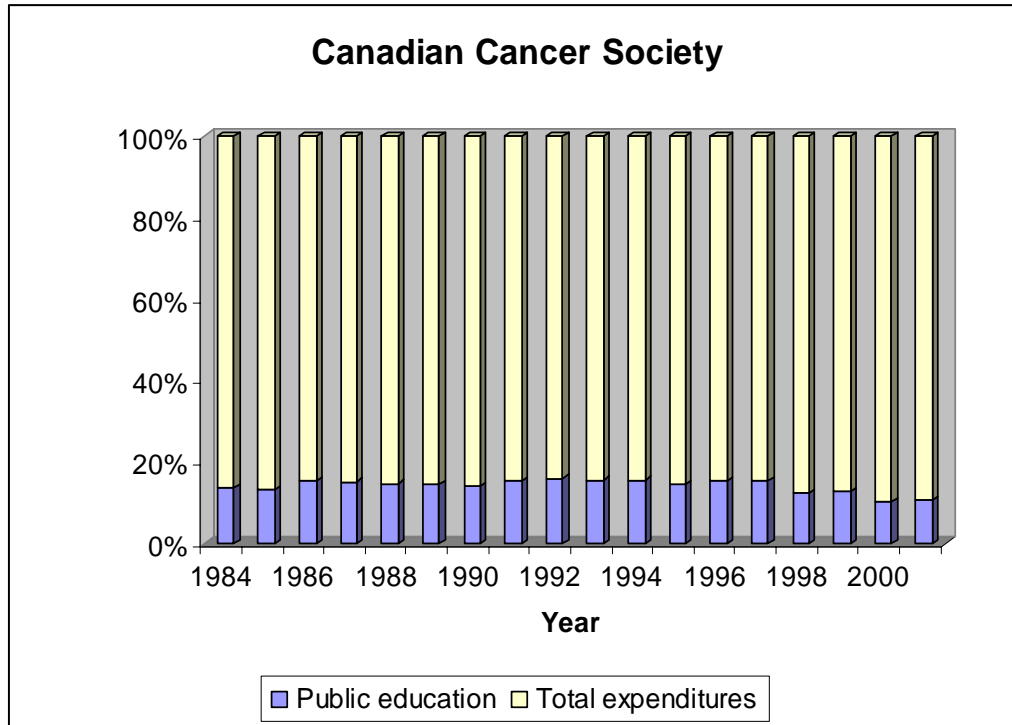
The mere existence of these various messages and policy statements is, in itself, of limited importance to public discussion of health issues if the messages are not being widely disseminated. It is therefore of interest to reflect on the amount of money spent by NGOs on public education measures. Figures 4 – 6 below trace these expenditures out over the last few decades for the Canadian Cancer Society and the HSFC, two of the groups most actively involved in public education campaigns in Canada. In 2001, the two organizations spent over \$40 million combined on public education.

Figure 4: Educational Expenditures for the Canadian Cancer Society and Heart and Stroke Foundation of Canada



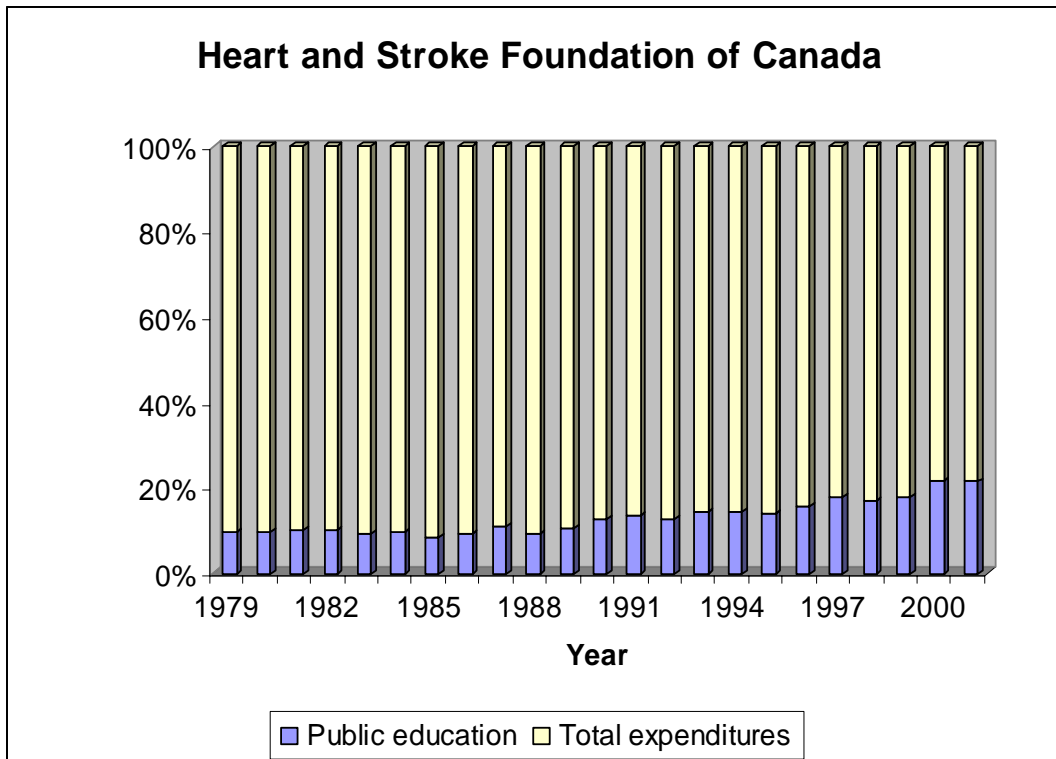
(Source: Canadian Cancer Society and Heart and Stroke Foundation of Canada Annual Reports, various issues).

Figure 5: The Canadian Cancer Society's Public Education Expenditures as a Percentage of Total Spending



(Source: Canadian Cancer Society Annual Reports, various issues).

Figure 6: The Heart and Stroke Foundation of Canada's Public Education Expenditures as a Percentage of Total Spending



(Source: Heart and Stroke foundation of Canada Annual Reports, various issues).

The litany of diet-related concerns raised by Canadian NGOs raises the question of who should take the lead in addressing these issues. In February 2004, the Heart and Stroke Foundation (HSFC) indicated that the increasing number of overweight and obese Canadians poses one of the greatest-ever threats to public health in this country. Almost half (47%) of Canadians are overweight or obese. When the HSFC asked Canadians whom they felt was responsible for responding to this issue, eighteen percent indicated that some level of government should take the lead. Only two percent thought that the food industry should show leadership. Despite this, the HSFC argues that action on the part of the food industry is a key part of the puzzle. In its call to action, the HSFC urges the food industry to:

- Modify the food supply by reducing saturated and trans fat in foods.
- Restrict the distribution and advertising of “junk foods” (energy-dense, nutrient-poor foods) to children. Remove these foods from elementary and high school vending machines and cafeterias. The HSFC notes that while pulling soft drinks out of schools may seem like a good beginning, this step will make little difference if vending machines still contain sugar-laden fruit drinks.
- Ensure that portion sizes and pricing are in alignment. Make healthy choices available in restaurants, supersize salads, rather than charging more to replace the fries that already accompany meals.
- Improve nutritional labelling and information in quick-serve restaurants.

III. The Industry Perspective

The Food Processing Industry

As implied by the HSFC statements above, any changes in food consumption patterns depend on the actions of players within the food system. In this case, the relevant groups are processors, retailers, and restaurants. The food system can resist the imposition of standards and labelling or ingredient restrictions if it feels that these do not meet its best interests; thus, it may need to be given incentives to develop new products. Given that the food industry serves as the main agent that determines which products consumers can purchase and in what forms, it has the power to significantly modify behaviour through its marketing and advertising strategies. In general, those strategies that will

provide industry with positive outcomes are likely to be more effective than will any action the industry resists.

Over the last decade, consumers have become more concerned with eating nutritious foods. The food industry in Canada and abroad has responded by offering healthier products. This industry response is largely the result of increased awareness about the relationships between nutrition and health. The food industry has introduced an array of products with characteristics such as reduced fat, sugar-free, low-carb, transfat-free, nutrient-enriched, added fibre (soluble or non-soluble), low calorie, low cholesterol, low glycemic index, gluten-free, peanut free, or low-fat. Additionally, manufacturers have been exploring ways to utilize health-enhancing ingredients such as phytosterols, soy protein, probiotics, and prebiotics.

The food industry clearly recognizes that nutrition is an issue that will continue to occupy the spotlight, particularly given the fact that populations across the globe are aging and nations are incurring increased health care costs. Obesity, the so-called “new epidemic,” has been described as a problem of global dimensions, and it is a problem that can only be addressed if all parties contribute to the solution. In the interim, the industry believes that it contributes to solving the problem by offering healthier products, developing healthy eating programs, or encouraging consumers to engage in physical activity.

Industry’s goal has been to attend to consumer preferences: Consumers’ desires for healthy, tasty, and convenient alternatives drive the food industry’s actions. This has been the motivation for PepsiCo, Inc., through its subsidiary Frito-Lay, to eliminate trans-fats from its salty snacks, or for Cargill Health & Food Technologies to formulate phytosterols to be used as cholesterol-reducing agents in foods, beverages, and dietary supplements.

The Canadian Food Industry

The food industry responds differently to different nutrition-related concerns. For example, it has reformulated some common products to contain few or no trans-fats, something that benefits the population as a whole, and it has also developed foods that respond to specific trends or fads, such as the increased popularity of low-carbohydrate diets, which can be classified as niche demands. While the former response is intended to maintain consumer confidence and highlight manufacturers’ concern for consumers’ well-being, the latter is focused on satisfying newly-created consumer demands. Governments sometimes address these generalized issues in order to guarantee consumers access to a

healthy food supply. However, it is industry that responds to specific consumer trends, as these present new business opportunities.

In Canada, most of the top ten food processing companies (as identified by Eagle, 2003) have displayed some interest in responding to an increased consciousness about nutrition. Table 4 presents some of their publicly stated positions. These statements, which were principally obtained from recent company press releases (all press releases in this section are obtained from company websites, which are listed in Appendix B), illustrate how the food industry reacts to a generalized consumer interest in a specific issue. As Table 4 indicates, some food processing industry players expect the rise in obesity to be tackled not only by industry, but also by consumers and possibly government. Additionally, some companies state that their traditional products can be included in a healthy diet when consumed in moderation, an avowal that illustrates how important food manufacturers feel it is to continue to sell popular, long-standing products.

Table 4: Press Releases From Canada's Top Ten Food and Beverage Processing Companies

Company and Ranking	Date of Press Release	Press Release Summary
1. McCain Foods Limited	August 12, 2003	Rising levels of obesity and concern about its associated health risks have raised consumer health consciousness. We believe that all McCain products can be part of a nutritionally balanced diet and a healthy, active lifestyle. Ultimately, it is the consumer who chooses what food he eats, how often and how much. Today's consumers want healthy alternatives that do not compromise taste or consistency in quality. McCain Foods will continue to respond to consumers and customers, provide quality foods, expand product choices, and develop new products for a health conscious world.
2. Maple Leaf Foods, Inc.	July 5, 2001	We are committed to delivering products that respond to the needs of consumers, particularly those who prefer leaner food choices.
3. Saputo, Inc.	Financial Results for Fiscal 2003 Outlook	Advances in technology will allow us to increasingly utilize wholesome milk products in order to meet a broad range of nutritional, lifestyle, and health needs.
4. Molson, Inc.	December 22, 2003	Although brewers have managed to reduce the carbohydrate levels in beers, it is worthwhile noting that both light (9g) and regular beers (12g) have modest carbohydrate levels, as compared to most other alcoholic beverages, such as mixed drinks that include sugar-sweetened soft drinks (38+g) and ready-to-drink coolers (30 to 35g).
6. Nestlé Canada	Website statement	It is widely accepted that nutritional issues will remain in the spotlight over the coming years, partially because they are linked to global trends such as ageing populations and escalating healthcare costs. Nestlé believes that it can best help to address these issues by continuing to offer innovative and improved products, and by helping consumers worldwide to understand all the factors that contribute to health and improved quality of life.
8. Agropur-Co-operative	August 2002	Natrel has always been concerned with providing Canadians with foods and beverages that contribute to a healthier lifestyle. A healthy diet is crucial in the prevention of many health problems such as obesity, diabetes, cardiovascular illnesses, and several cancers.
9. Schneider Corporation	June 1, 2002	Schneider Corporation has risen to the challenge of providing Canadians with nutritious food choices that suit a high pace lifestyle.
10. Unilever Canada	November 7, 2003	Tackling overweight is a task for society as a whole. "Obesity or overweight is a growing problem of worldwide proportions and one that can only be solved if all those concerned work together and accept their responsibility. Unilever, as one of the big companies in the foods industry, recognized the problem a long time ago and drew up a policy in which extra attention is focused on 'good for you' products...Our aim is to be part of the solution instead of part of the problem." Although consumers tend to lay the blame mainly on the foods industry, the causes of these problems are much broader. "More than half of our top innovations can be seen as 'health & wellness' products. But that does not mean that all other foods in our portfolio are bad. It's a matter of consuming them in moderation as part of a healthy lifestyle."

Although the food industry has begun offering an increasing number of healthful products, its primary focus remains on mainstream consumers, who are expected to continue consuming traditional products. Manufacturers' secondary focus is on increasing the number of offerings it supplies and in providing consumers with more choices, not all of which are healthful alternatives.

In Canada, some of the specific healthier products offered include:

- French fries prepared in non-hydrogenated oils, in an effort to reduce trans-fatty acid levels (Premium Superfries, McCain Foods Limited);

- Chicken meat that is twenty-five percent lower in fat because the chickens have been fed vegetable-grain diets (Maple Leaf Prime Naturally*™, Maple Leaf Foods Inc.);
- Regular-strength lower-carb beer (Molson Ultra, Molson Inc.);
- Nutritional supplements that contain the vitamins and minerals needed to fill the gap from consuming too few fruits and vegetables (Natrel Nutrition 24, Agropur Co-operative);
- Omega-3 enriched milk, which is designed to reduce “bad” cholesterol levels (Natrel Omega-3, Agropur Co-operative, and Neilson Dairy Oh!, Neilson Dairy);
- Low-fat cottage cheese (Sealtest Country Choice Cottage Cheese, Agropur Co-operative);
- Sausages that contain forty percent fewer calories than full fat sausages (Schneiders’ Lean Links™, Schneider Corporation);
- Frozen portable handheld meals designed for individuals who want low-calorie, low-fat alternatives (Schneider’s Lean Stuffs™, Schneider Corporation);
- Spreads and cooking products that include plant sterols that are clinically proven to reduce the absorption of harmful cholesterol (Becel/Flora, introduced by Unilever Canada); and
- High fibre products (Kellogg’s “All Bran Buds,” cereal, which contains wheat bran and psyllium, Catelli Healthy Harvest Pasta).

Additional examples of products introduced in Canada to appeal to health-conscious consumers are provided in Table 5 below.

Table 5: Examples of Some Products Available in Canada

Specific Characteristic	Product	Company
Reduced-Fat or Low-Fat	Milk Butter Yoghurt Cheese Mayonnaise Salad Dressing Some Meats	Various Companies Various Companies Various Companies Various Companies Kraft, Hellman's, Becel Kraft, President's Choice Schneider's, Maple Leaf
Sugar-free	Chocolate Popcorn Jelly Beans Hard Candy Soft Drinks	Hershey Foods Harry and David Harry and David Hershey Foods Coca Cola, PepsiCo
Low-carb	Beer Hamburgers Wraps	Molson, Labatt Burger King, McDonald's Subway
Trans-free	Oreo Cookies Various Salty Snacks Margarine Pea Butter	Kraft Frito Lay Unilever Mountain Meadows Food Processing Ltd.
Nutrient-enriched	Juices (Calcium) Soy Beverages (Calcium) Milk (Calcium) Nutritional Supplements (Vitamins and Minerals) Cereals (Vitamins and Minerals)	Minute Maid Parmalat Natrel Natrel Kellogg's
Fibre (Soluble, Non-soluble)	Cereals Containing Psyllium, (Soluble Fibre) Wheat Bran Cereals (Insoluble Fibre) Oat Cereals (Beta Glucan)	Kellogg's Kellogg's, President's Choice, Post Quaker, Kellogg's
Low-calorie	Sweeteners	Sweet 'n Low, Hermesetas, Nutra Sweet, Equal
Low-cholesterol	Milk Products with Low Fat Content Lean Meats	Various Companies Various Companies
Low glycemic index	Cereals (Wheat Bran, Oat) Vegetables and Fruits	Kellogg's, President's Choice, Post, Quaker Various Companies
Gluten-free	Bakery Products Various Products (Bread, Pasta, Cookies, Mixes, Crackers and Pretzels, Soups and Sauces) Pasta Various Products (Baked Goods, Beverages, Cookies, Desserts, Flour Mixes, Pastas, etc.)	Kinnikinnick Foods Glutino Food Directions Inc. Liv-N-Well Distributors Ltd.
Peanut-free	Pea Butter Chocolate Various Candies	Mountain Meadows Food Processing Ltd. Nestle, Cadbury Trevor Allan
Phytosterols	Margarine Capsules	Becel Canadian People Products
Soy protein	Tofu Various Products (Meat Substitutes, Bars, Shakes) Isolated Soy Protein	Various Companies Eat well DuPont
Probiotics	Caplets	Nature's Nutrition Store
Prebiotics	Capsules Powder	Nature's Nutrition Store Nature's Fare Natural Foods

Many of the new entries are intended to meet the needs of persons who are on restricted diets due to allergies or other health concerns. However, due to the fact that at any given time only eighteen

percent of Canadians are on a diet and only one percent of the population follows a low-carb diet (Toman and Langford, 2004), companies have stated that their main focus remains on their biggest brands.

In the early-to-mid 1980s, the Canadian government, together with some food companies, launched a pilot program that was designed to make consumers aware of the nutrient contents in some foods. In 1985, George Fleischmann, president of the Grocery Products Manufacturers of Canada (GPMC), stated that food manufacturers preferred a practical and voluntary system (Horgan, 1985); conversely, Charles Sheppard, chief of the food division in the Department of Consumer and Corporate Affairs, said that the government should act to protect consumers from deceptive and misleading claims. Producers and consumers alike found Ottawa's 1983 proposed guidelines difficult to adhere to; thus, producers decided not to adopt nutrition labelling, citing the complications of complying, and consumers rejected the guidelines, arguing that ordinary buyers could not understand them (Consumers Association of Canada, 1984). Finally, in 1988, in a response to increased interest from health conscious consumers, voluntary labelling was adopted. It became mandatory in 2003, with a three-year grace period for large companies and five-year grace period for SMEs.

By 1989, as consumers became increasingly aware of the links between food and health, industry began changing its positions. Shelagh Kerr, director of scientific affairs for the GPMC, stated, “[C]onsumers are taking dietary action to guard their health, which has resulted in a substantial market for lower-fat and high-fibre products...Manufacturers must respond to the lifestyle through which consumers are steering or they risk getting left by the wayside” (Bertin, 1989). Manufacturers began to offer “light” or “low-cal” products, and made major efforts to reformulate products that they had been selling for years. (For example, RJR Nabisco, Inc. reformulated the Oreo cookie to cut its cholesterol content and chocolate manufacturers tried to find new recipes that used no palm oil.)

It could be said that the baby-boom generation drove this change. A 1989 article in the *Globe and Mail* stated, “[T]he health faddists of the 1960s are now prosperous, overweight and health-conscious people in their 40s.” Shelagh Kerr, the voice of the food industry, responded by saying, “[T]eens were the market influencers back in the 1960s, but today it's the 35- to 49-year-olds who have the most influence because of their size and buying power. Nutrition-related diseases ... are more apparent as the population ages” (Bertin, 1989).

In 1992, after two years of development, Health and Welfare Canada released its new “Canada's Food Guide to Healthy Eating,” which emphasized a low-fat and higher carbohydrate diet. Acting Minister of Health Fred A. Stewart highlighted the government's effort to provide a guide that

reflected changing eating habits and increased nutritional knowledge. He also stated, “I am pleased to see that every effort was made to include health professionals, including our health unit nutritionists, and the food industry as the guide was developed over the last two years” (Canada Newswire, 1992).

Even with all the attention that healthy diets and “lite” alternatives received in the late 1980s and early 1990s, obesity has been on the rise since the beginning of the last decade. In 1993, Elizabeth Hamilton, a Winnipeg dietitian, said, “[I]f people are using them [“lite” products] for that reason [weight loss], they're not getting the desired results” (Krueger, 1993). The climb in obesity rates may have been motivated by the fact that health consciousness stimulated considerable amounts of research that may have provided consumers with misleading information. For example, in 1995, it percolated to the public domain that individuals with insulin resistance could be harmed by eating complex carbohydrates; additionally, the information further stated that these persons could eat fat in normal amounts. In Canada, Dr. David Jenkins, a professor of nutritional sciences at the University of Toronto, expressed his frustration: “First of all we tell people to lay off fat. Now we tell them to go with it. If the public were to gobble up this message, it would put all of us back by 20 years in terms of public dietary advice. And we would throw the food industry into a tailspin” (Taylor, 1995).

Despite the controversy, in the mid-1990s, the food industry decided to bet on low-fat products, and manufacturers introduced a number of these foods. In the U.S., more than 5,600 lower-fat products were introduced between 1988 and 1992, and U.S. grocery sales for all low-fat foods amounted to \$18 billion in 1993 and were estimated to reach \$30 billion by 1997. In 1993, Nabisco debuted SnackWells, a line of 11 no-fat and low-fat crackers and cookies, which, by 1994, had sales of \$400 million and were the best-selling brand of cookies and crackers in the U.S. Frito-Lay followed Nabisco’s lead and invested \$225 million in leaner snacks. “The time is right to do this,” said Steven Reinemund of Frito-Lay, “because surveys show that fat is the principal health concern of Americans, and there is an aging cohort of baby boomers that is interested in lower-fat products” (Powell, 1995).

In the late 1990’s, trans-fatty acids, a by-product of food processing, became the new food demon. In 1998, Dr. Walter Willett, chairman of the Department of Nutrition at the Harvard School of Public Health, pointed out that “[P]eople with a higher intake of trans fats have a higher risk of heart disease” (Taylor, 1998). Prior to that point, food manufacturers had used trans-fats as antispoiling agents in many food products, from baby foods to baked goods to candies, and fast food chains used trans-fats for deep-frying. Trans-fats are still being used in some products.

Recent research has shown that Omega-3 fatty acids and mono-unsaturated fats like oleic acid have positive impacts on health. Food manufacturers have begun offering products that contain these

nutrients (i.e., Omega-3 enriched milk), or have highlighted the fact that some products already contain them (i.e., the oleic acid in olive oil). The learning journey is certainly not over. Health consciousness has pushed research communities, government, and industry to investigate what is healthful, to regulate its distribution, and to manufacture convenient alternatives.

A. The Multinational Food Industry

With respect to nutrition and health, the multinational food industry has generally been more active than its Canadian counterpart, particularly in its observable public relations. Table 6 shows nutrition- and health-related statements from the top ten food manufacturers (as determined by sales figures). The data are taken from company websites (listed in Appendix B). In some cases, the industry is working with nutritionists to offer advice to consumers. Of special industry interest is a desire to educate consumers, mainly those with families, in an effort to reach nearly all age groups and to help children to become nutrition conscious at very early ages.

Table 6: Summary of Various Multinational Food and Beverage Company Recommendations

Company	Date	Press Release Summary
Kraft Foods	<i>November 7, 2003</i>	<p>* Kraft Foods and Curves Fitness Centres launch a program to emphasize healthy eating and fitness. Nutritionists and food experts from Kraft Foods have developed Healthy Living tips, tools, and food ideas to help families take steps toward healthy lifestyles. Healthy Living Recipes make it easier for consumers to eat right, because they are developed with good nutrition and great taste in mind.</p>
	<i>September 3, 2003</i>	<p>* Kraft Foods Inc. named ten experts to its Worldwide Health & Wellness Advisory Council, as part of the company's ongoing commitment to help address the rise in obesity.</p> <p>The Council's initial focus will be the following:</p> <ul style="list-style-type: none"> - Developing an appropriate approach to capping the portion sizes on the company's single-serve packages - Establishing measures to guide the nutrient content of all new products and improving existing products or providing additional alternative choices, where appropriate - Developing locally appropriate criteria for use in different regions of the world, in order to determine the selection of Kraft products that will be sold through in-school vending machines - Creating a standardized approach for nutrition labelling and for health claims in countries where such regulations do not exist.
	<i>July 1, 2003</i>	<p>* Kraft Foods Inc. will initiate a new series of steps to further strengthen the alignment of its products and marketing practices with societal needs. "The rise in obesity is a complex public health challenge of global proportions," said Betsy D. Holden, Co-CEO of Kraft Foods. "Just as obesity has many causes, it can be solved only if all sectors of society do their part to help. Kraft is committed to product choices and marketing practices that will help encourage healthy lifestyles and make it easier to eat and live better."</p> <p>Kraft is committed to taking steps in four areas:</p> <ul style="list-style-type: none"> - Product nutrition - Capping the portion size on single-serve packages - Marketing practices - Elimination of all in-school marketing - Consumer information - Nutrition labelling in all markets worldwide, including markets where labelling is not required - Advocacy and dialogue - Advocacy for appropriate public policies to engage schools and communities in improving fitness and nutrition <p>The commitments supplement a range of other programs the company has conducted for many years, in an effort to help people improve their eating and activity behaviours. These include:</p> <ul style="list-style-type: none"> - Providing a wide variety of food choices, including numerous reduced-fat and sugar-free products - Providing extensive healthy-lifestyle information and recipes in booklets and brochures and on kraftfoods.com and other company websites - Creating the Kraft Diabetic Choices program to provide products and important health and lifestyle information for diabetics - Investing more than \$17 million since 1997 in the Kraft Fresh Produce Initiative, which significantly increases the amount of fruits and vegetables distributed by U.S. food banks to people in need - Developing an 8-week healthy-lifestyle course for Latino families, which is currently being piloted in four U.S. cities
	<i>May 31, 2003</i>	<p>* Diabetes student workshop wins top honours for influencing healthy living behaviours among children. "We know that healthy eating and physical activity are essential to preventing and managing the disease. We also know that we need to encourage children to develop lifelong healthy living behaviours and this workshop is doing just that."</p>
Nestle USA, Inc.		<p>Please refer to Table 4.</p>
ConAgra, Inc.	<i>March 10, 2003</i>	<p>*ConAgra Foods' Healthy Choice® brand and The American Dietetic Association have created "Supermarket Shopping Solutions," a new program that will launch during National Nutrition Month® in March. The program teaches consumers everything from reading food labels and understanding nutrition claims to planning balanced meals and selecting nutritious foods in every aisle of the grocery store.</p>

Company	Date	Press Release Summary
Unilever		Please refer to Table 4.
PepsiCo, Inc.	<p>January 14, 2004</p> <p>January 5, 2004</p> <p>December 1, 2003</p> <p>October 28, 2003</p> <p>September 23, 2003</p> <p>September 17, 2003</p> <p>July 21, 2003</p> <p>July 9, 2003</p> <p>April 10, 2003</p>	<p>* The company's decision to remove trans fats from all its chips in 2003 resulted in the elimination of over 50 million pounds of trans-fats from the American diet</p> <p>* "Different life stages, lifestyles, and health concerns require customized nutrition to deliver 'what is best for me,' and Essentials meets those needs without compromising taste. It's making healthy even healthier."</p> <p>* Overweight and obesity have become "weighty" matters. The reasons behind America's collective weight gain are multi-faceted, but the good news is that eating more fibre-rich foods may be part of the solution.</p> <p>* Women manage weight with whole- grains, and research continues to prove that whole-grains are smart carbs. Limiting carbohydrates is the latest fad for weight loss, but a new study shows that cutting whole grains out of the diet may be one of the worst things people can do.</p> <p>* A collaborative program between Quaker Oatmeal and the American Dietetic Association encompasses recommendations from a survey of nearly 1,000 dietetic professionals. The online program teaches parents how to prevent childhood weight gain and obesity by establishing key nutrition habits at home in one month.</p> <p><i>Step One:</i> Become a Good Nutrition Role Model <i>Step Two:</i> Introduce Whole Grains <i>Step Three:</i> Eat a Healthy Breakfast <i>Step Four:</i> Understand Portion Sizes <i>Step Five:</i> Measure your Progress</p> <p>* Frito-Lay launches print ad campaign declaring that America's favourite snacks have zero trans- fats.</p> <p>*American Dietetic Association survey identifies top calcium intake barriers: Women are "Confused About" or "Don't Know" daily recommendations. Quaker Oatmeal Nutrition for Women, ADA Respond to Need for Consumer Education, launch "Bone Up For Life" campaign.</p> <p>*The University of North Carolina at Chapel Hill and the Gatorade Company establish a multi-faceted partnership targeting doctors, community organizations, and families. "Get Kids in Action" is designed to identify a variety of real and proven solutions to increase physical activity among children to reduce and prevent childhood obesity.</p> <p>* In early 2003, Frito-Lay began eliminating trans-fats from Doritos, Tostitos, and Cheetos. At that same time, Frito-Lay also began changing packaging to include a trans-fat content line. The company's most popular products are already on store shelves with this nutrition label change, and Frito-Lay is the first company to have made this proactive change.</p> <p>* Researchers from Columbia University and Quaker Oats are presenting a study at the 2003 Experimental Biology meeting. The study finds that the risk of obesity is lower for kids who eat oatmeal regularly, as compared to those who do not. This study finds that children and teens who consume higher intakes of dietary fibre have lower Body Mass Index (BMI) levels or less body fat.</p>
Tyson Foods	July 7, 2003	Tyson Foods' Core Values include continuous product innovation, knowing the customer better than anyone else, being flexible, responding quickly to market demand, and making sure that food is safe and wholesome.
Cargill, Inc.	<p>August 1, 2003</p> <p>June 30, 2003</p>	<p>* As part of its strategy to promote healthy lifestyles and increase awareness of healthful ingredients and specialty products, Cargill Health & Food Technologies (H&FT) is co-sponsoring the 2003 Life Time Fitness Triathlon. Cargill H&FT hopes its sponsorship will raise awareness among professional and amateur athletes about the health-promoting benefits of some of its new health ingredient technologies.</p> <p>*Cargill Health & Food Technologies showcases product concepts at the 2003 Institute of Food Technologists' Annual Meeting and Food Expo. Product concepts emphasize fast growing categories and trends in the functional food and beverage industry – those focusing on women's health, bone health, heart health, and energy. In response to the growing demand by health-conscious consumers for effective, good tasting products, Cargill H&FT has</p>

Company	Date	Press Release Summary
	<p>April 17, 2003</p> <p>May 6, 2002</p>	<p>introduced a number of health-promoting ingredients that can be incorporated into a wide variety of functional food and beverage products.</p> <p>* Cargill focuses on food innovation, and Greg Page, Cargill's president and chief operating officer, said that Cargill is increasing its focus on food technology innovation. "Cargill is on a journey from being a commodity company to becoming an integrated food products company and a provider of food services...The challenges that face consumers today – feeding a growing world, maintaining healthy lifestyles, addressing nutrition and wellness issues – demand innovation from every link in the food chain."</p> <p>* Cargill Health & Food Technologies explains the benefits of phytosterols at a Cardiovascular Health Conference that is focused on educating healthcare professionals about the benefits of phytosterols. Phytosterol esters can offer a safe and effective means of reducing cholesterol levels and improving cardiovascular health. Elevated blood cholesterol is a major risk factor for heart disease, and heart disease is responsible for 50% of all deaths in industrialized countries. High blood cholesterol is one risk factor that can often be modified by lifestyle changes, such as eating a diet low in saturated fat and cholesterol and high in grains, fruits, and vegetables. Consuming phytosterol esters as part of a healthy diet low in saturated fat and cholesterol provides another natural option in the maintenance of cardiovascular health.</p>
<p>The Coca-Cola Company</p>	<p>October 27, 2003</p> <p>September 8, 2003</p> <p>September 8, 2003</p> <p>August 18, 2003</p> <p>August 6, 2003</p> <p>March 4, 2003</p> <p>January 28, 2003</p>	<p>* As high cholesterol in the U.S. reaches near epidemic levels -- the American Heart Association states that nearly half of the nation's adult population has cholesterol at or above 200 mg/dL -- Minute Maid introduces Heart Wise, the first orange juice proven to help lower cholesterol.</p> <p>* Bangkok, - "Qoo Aerobics" is also in alignment with the national priority of encouraging all Thais to lead healthier, more active lifestyles. Qoo is the smart choice for a health-conscious new generation who prefer a different fruit juice."</p> <p>* Bangkok, - The Step-O-Meter, a little red device that looks like a pager, plays a key role in encouraging Thai young people to get moving for good health. In Thailand, the Step-O-Meter is a key part of "Step With It," the first activity of the Thai Kids on the Move program. This program is Thailand's first in-school physical activity and nutrition program, and has been created through the cooperation of the Ministries of Public Health and Education, the Institute of Nutrition of Mahidol University, and the Coca-Cola System in Thailand.</p> <p>Singapore - F&N Coca-Cola (Singapore) rolls out a new program today to address the declining levels of physical activity among Singaporean students.</p> <p>*Thai Kids on the Move, an innovative physical activity and nutrition program in schools, has been launched. It is part of a partnership between the Ministry of Public Health, Ministry of Education, The Institute of Nutrition Mahidol University, and The Coca-Cola System In Thailand, and its goal is to reach over one million Thai students nationwide in five years. As Thailand's first in-school physical activity and nutrition program, Thai Kids on the Move is an innovative reflection of the latest thinking in promoting physical activity and nutrition to Thai youth. Thai Kids on the Move has two key objectives: To educate students about the importance of regular physical activities and a balanced diet and to activate students through fun physical activities that everyone, even those who do not normally participate in sports, can enjoy.</p> <p>* "Growing Healthy Minds and Bodies" will educate children about the importance of exercise, nutrition, and community service. Minute Maid and the Junior Master Gardener (JMG) Program, the international youth gardening program of the University Cooperative Extension network, are partnering to help reach and educate more children about the benefits of gardening as part of a healthy, active lifestyle. The multi-component program will include a special website, a gardening promotion, advertorials, a television campaign, and school grants.</p> <p>* "Bringing reliable information to consumers, at their family table, is a practical way to influence health behaviours,"</p>
<p>Mars, Inc.</p>		<p>No news releases available on the Mars, Inc. website.</p>
<p>Anheuser-Busch, Inc.</p>	<p>December 16, 2003</p>	<p>A brand that was introduced to adult beer drinkers in Fall 2002 has become a phenomenal hit among adult fitness enthusiasts, adult consumers living active lifestyles, and those looking for a great tasting beer with lower carbohydrates and fewer calories.</p>

At the 2004 USDA Outlook Forum, a PepsiCo vice president described several trends that are affecting the food business. These include demographic shifts, increasing time pressure, and increasing health concerns (Leach, 2004). With respect to increasing health concerns, the vice president stated that the path to wellness starts with implementing better marketing strategies, is followed by providing healthy product choices, and is completed by promoting healthy lifestyle habits.

Increasing obesity rates have led other industry players, such as the Coca-Cola Corporation, to propose some new guidelines about the availability of beverages in schools. Such guidelines propose different limits for elementary, middle, and high schools. These corporations also stress physical activity as a major promoter of wellness, and have been fighting youth obesity in various Asiatic countries by establishing programs that emphasize non-sedentary lifestyles.

As is the case in Canada, some multinational companies state that obesity is a societal phenomenon that cannot be resolved solely by industry. For example, Kraft Foods' Co-CEO has said, "The rise in obesity is a complex public health challenge of global proportions...Just as obesity has many causes, it can be solved only if all sectors of society do their part to help."

Innovation is a very important part of the food business, and the industry works with research institutes and governments to offer healthy alternatives. However, traditional factors, such as price and taste, remain important to consumers. Thus, new products must be reasonably priced, tasty, healthy, and also convenient.

Other issues currently being addressed by the international food and beverage industry include:

- The media's impact on children and the importance of developing responsible marketing programs;
- The regulation of health claims used in good-for-you products;
- The importance of portion size in promoting healthier eating habits.

B. North American Trade Associations

Food industry companies contribute to various national and international trade associations. Given that these associations represent a variety of companies and sometimes a multitude of industry groups, their agendas are often broader than those of the individual companies. Table 7 lists some of these organizations' policy statements (as collected from the news releases on the various association web sites, listed in Appendix B).

Table 7: A Summary of Various Food Industry Trade Association Recommendations

Organization	Date	Extracts from News Releases
FCPMC Food and Consumer Products Manufacturers of Canada	2004	FCPMC adds a substantial new section to their website entitled "Health Active Living," which includes recommendations for consumers, as well as discusses the role of the food industry in consumer health issues.
	January 15, 2003	<p>* The Food and Consumer Products Manufacturers of Canada (FCPMC) supports recommendations made by Health Canada and international health organizations that advise consumers not to make changes to their diets based on current preliminary research that shows varying levels of acrylamide in foods. As an industry, Canadian food manufacturers are working with scientists, governments, and food industries around the world to identify what research is required and to determine the mechanisms of formation of acrylamide.</p> <p>Leading health organizations around the world, including the U.S. Food and Drug Administration and the World Health Organization, have stated that there is no scientific evidence that acrylamide presents any known risks to human health. "Based on the current knowledge, the best dietary advice is to continue to follow Canada's Food Guide to Healthy Eating."</p>
	January 01, 2003	<p>* The Food and Consumer Products Manufacturers of Canada (FCPMC) and its food members today commended Health Canada for introducing new regulations that will help Canadians make more informed food choices. According to Laurie Curry, VP Public Policy and Scientific Affairs, FCPMC, and a registered dietitian, "Today marks a milestone for the food manufacturing industry. We've been working with government and other stakeholders for over 10 years in an effort to bring consistent, easy-to-read nutrition information on packages to Canadians."</p> <p>The food manufacturing industry is an ardent supporter of the new regulations that will increase the amount and consistency of nutrition information on packaged food products. In addition, the industry applauds the introduction of diet-related health claims, which provide information on the relationship between diet and disease, as well as nutrient content claims, which describe the levels of a nutrient in a food. "With the introduction of food claims, manufacturers will be able to respond to consumer demands for more nutrition information and innovative products that will meet their dietary needs and help them achieve a greater level of well-being," says Curry. The food manufacturing industry has a long history of working co-operatively with Health Canada, consumer groups, dietitians, and academia and leads the drive to offer Canadians more meaningful and relevant nutrition information on food products. In the early 1980s, food manufacturers adopted and promoted voluntary nutrition labelling as a first step towards providing more nutrition information to consumers.</p>
	June 27, 2002	* In response to a joint release issued by the World Health Organization (WHO) and the United Nations Food and Agriculture Organization (FAO), Canadian food manufacturers support the call for more research to better understand human exposure to acrylamide from foods.
	April 11, 2002	<p>* Appearing before the Standing Committee on Health, Canada's food manufacturers today urged government to "[R]eserve mandatory labelling for health and safety reasons so that Canadian consumers are not misled about the safety of their food products." Laurie Curry, VP Public Policy and Scientific Affairs, for the Food and Consumer Products Manufacturers of Canada (FCPMC) presented her members' views on the implications of the labelling of genetically modified (GM) foods for consumers and the food industry.</p> <p>The FCPMC also asked the government to support the development of a voluntary labelling system when information is provided to consumers for reasons other than health and safety. "We want to ensure that a labelling standard has provision for consumer choice in the marketplace," said Curry. "That's why we support developing a standard for foods that are not products of gene technology, for those consumers who prefer to purchase these products." The food manufacturing industry is currently working with government, consumer groups, and general interest groups to develop a voluntary labelling standard under the direction of the Canadian General Standards Board. "It is essential that the labelling standard is informative, understandable, verifiable, not false and not misleading for consumers," emphasized Curry.</p>

Organization	Date	Extracts from News Releases
	June 28, 2001	<p>* The Food and Consumer Products Manufacturers of Canada (FCPMC) and many of its food members met with Health Canada to discuss the government's proposed amendments to the Food and Drugs Act. According to Laurie Curry, VP Public Policy and Scientific Affairs, FCPMC, and a registered dietitian, "Our initial reading of the proposal leads us to believe that Canadians will have access to consistent, easy-to-read nutrition information, which will allow consumers to make more informed food choices."</p> <p>The food manufacturing industry is supporting Health Canada's proposal to increase the amount and consistency of nutrition information on packaged food products. In addition, the industry applauds the introduction of diet-related health claims, which provide information on the relationship between diet and disease, as well as nutrient content claims, which describe the levels of a nutrient in a food. "With the introduction of food claims, manufacturers will be able to respond to consumer demands for more nutrition information and innovative products that will meet their dietary needs and help them achieve a greater level of well-being," says Curry.</p>
<p>CCGD Canadian Council of Grocery Distributors</p>	<p>August 21, 2003</p> <p>August 15, 2003</p> <p>December 2, 2002</p> <p>May 26, 2002</p>	<p>* Food Safety is the number one priority for all members of CCGD. To this end, during the historic blackout experienced in Ontario, from Thursday, August 14th at 4:15 PM to sometime Friday, Saturday, or Sunday August 15, 16 or 17, 2003, our food retail/distribution centres placed food, consumer, and employee safety as the number one action to support through this crisis. Member companies of the CCGD take great care every day to ensure that the food in our stores is safe. To do this we follow specific regulations outlined in the Ontario Food Premises Regulation # 562. Any foods that do not meet the specifications outlined in this food safety regulation are, and will continue to be, removed from the shelves and storage rooms and destroyed.</p> <p>* David Wilkes, Senior Vice President, Trade and Business Development of the Canadian Council of Grocery Distributors said that members' "number one priority is food safety." Members are ensuring that perishable items including meat, produce, dairy, and frozen products are safe for consumption. "Shoppers can be assured that their grocer will be vigilant in ensuring the safety of the products sold." There are well-established procedures to determine food safety as it relates to temperature requirements.</p> <p>* CCGD members believe that Canadian consumers should have the option of purchasing irradiated products as a further safeguard against food borne illness.</p> <p>* Mr. Nick Jennery, President and CEO of the Canadian Council of Grocery Distributors (CCGD), announced that for the fourth consecutive year, members have renewed their commitment to remind consumers they have a role to play in ensuring that food consumed in the home is safe. The promotion campaign aims to inform consumers of the crucial, yet simple steps they can take to help keep their food safe from the time they bring it home from the grocery store to the time it is consumed. They use four key messages for food safety: Clean, Cook, Chill, and Separate.</p>
<p>CFIG Canadian Federation of Independent Grocers</p>	<p>March 14, 2003</p>	<p>* Convenience, health, nutrition, and international flavour are all part of the products being featured at Grocery Showcase West in Vancouver. From organic maple syrup and pickles to ostrich and bison burgers to Caribbean celebration cakes that have been served to royalty, celebrities, and political leaders, Grocery Showcase West's 300 plus exhibitors are sure to satisfy curious appetites.</p> <p>Here are just some of the temptations that await:</p> <ul style="list-style-type: none"> - Hills Foods Ltd.: Organic beef, ostrich, bison, and musk ox burgers. - KO & C Enterprises Ltd.: <i>Marukoh</i> - organic soy sauce (no preservatives, all natural and organic ingredients); <i>Tong Yeng</i> - tuna in oil (high in Omega-3 fats) and roasted eel (high in calcium); <i>Sheng Hsiang Jen</i> - salted pistachios (no preservatives), <i>FruGurt</i> (low-fat, high-fibre and nutrient content), <i>Squez'n'Bites</i> (low-fat, high-fibre and nutrient content); <i>Wan-An</i> - Oolong tea and rice cooking wine. - L.B. Maple Treat Inc.: Luc Bergeron Organic Maple Syrup and Uncle Luke's Pure Maple Syrup. - Monterey Mushrooms: Clean 'N Ready pre-washed mushrooms—no preparation required by consumers. - Olympic Dairy Products Ltd.: Organic, no-fat, no cholesterol yoghurt. - Puresource Inc.: <i>Real Berry Bar</i> – organic with three servings of fruits and vegetables. - Sun-Rype Products Ltd.: <i>Fruit-to Go snacks</i> – 100% fruit with no added sugar, colour, or preservatives in nine popular flavours, including new tropical and fruit punch. <i>Organic fruit snack</i> – apple and apricot. <i>Energy-to-Go Bars</i> – all natural, 100% fruit energy bars. <i>Fruit and Veggie 100% Juices</i> – each fruit and vegetable blend contains a seven vegetable blend and delivers two full servings of fruits and vegetables per 250-ml serving. - Sunshine Farms: Organic pickled garlic and baby dills. - Terra International Foods Inc.: <i>Swiss Organics</i>—organic seasoning salts; all natural antipasto and green beans.

Organization	Date	Extracts from News Releases
	March 4, 2003	* Grocery Showcase West 2003 (GSW 2003) promises informative, frank discussions about the most current and relevant issues facing the industry. Crisis communications, franchise legislation, and the essentials of customer service are just some of the hot session topics at GSW 2003.
CPMA Canadian Produce Marketing Association	Website statement	* "The CPMA is committed to providing consumers with timely information on health and nutrition in relation to fresh produce."
ICGMA International Council of Grocery Manufacturers Associations	<p>October 31, 2003</p> <p>October 30, 2003</p> <p>October 31, 2001</p> <p>June 09, 2003</p> <p>January 25, 2002</p>	<p>Extracts from comments and correspondence published on website:</p> <p>* ICGMA promotes the harmonization of scientific standards and policies concerned with health, safety, packaging, and labelling of foods, beverages, and other consumer packaged goods. ICGMA also works to facilitate international trade in these sectors by elimination or preventing artificial barriers to trade.</p> <p>* ICGMA supports new work to define "trans-fatty acids" and utilizes the following definition: "Trans fat is defined as only the trans-fatty acids with nonconjugated double bonds (fully hydrogenated oils and partially hydrogenated oils), conjugated linoleic acid (naturally occurring in meat and dairy products) would be excluded from the definition of trans-fat. This proposed definition for trans-fat takes into account the fact that the identification of trans-fatty acids is based on the actual chemical structures of the fatty acids. ICGMA supports this definition because it would exclude fatty acids with conjugated bonds-- fatty acids that are metabolized differently than those with non-conjugated bonds.</p> <p>* The ICGMA is pleased to provide input on the "Draft Comments on the Proposed Draft Revised Standard for Processed Cereal-Based Foods for Infants and Young Children" at Step Three of the procedure. Pictures are used on labels to describe the contents, uses and preparation of a product. Pictures on complementary foods also serve to communicate to the consumer the age of the child for which the product is intended. Pictures are especially important to communicate to consumers that are unable to understand the written instructions. ICGMA believes that factual nutrient content claims and/or health claims on complementary foods (e.g., iron-fortified cereals) are very useful for parents purchasing products. Furthermore, it is unclear whether this provision would apply to only those complementary foods specifically manufactured for infants and young children, or whether it would apply to all foods that could potentially be consumed by infants and young children, e.g., ready-to-eat cereals, fruit juices, etc. Disallowing nutrition and/or health claims on these foods would deprive consumers of valuable information regarding the nutrition and health benefits of these foods.</p> <p>* The International Council of Grocery Manufacturers Associations (ICGMA) appreciates the opportunity to provide input on the Draft Guidelines for Use of Nutrition and Health Claims at Step Eight (Alinorm 03/22A, Appendix IV). ICGMA supports labelling that provides consumers with the clear, useful, and relevant information needed in order to make an informed choice when purchasing a product; therefore, we support including appropriate information and health claims on the labels. However, the purpose of the label is to inform consumers about the product in that particular package, and any required information for the label should be limited to the specific labelled product. In addition, label space is very valuable to manufacturers, is often very limited, and, in many countries, the information must be presented in several languages. Thus, ICGMA believes that the requirement in Section 7.5.3 to include information on other dietary sources when making a health claim is inappropriate.</p> <p>* The International Council of Grocery Manufacturers Associations (ICGMA) is pleased to provide input on the Codex Alimentarius "Proposed Draft Recommendations for the Labelling of Foods Obtained Through Certain Techniques of Genetic Modification/Genetic Engineering" (Alinorm 01/22A, Appendix V) and the definitions in the Annex I. ICGMA continues to oppose those components of labelling of foods obtained through techniques of modern biotechnology that are not based on sound science. Without the foundation of sound science, Codex will jeopardize its reason for being. Science, not politics, forms the basis for advancing standards that contribute to the protection of public health. Facilitating safe global food trade, not creating global trade barriers, should be the desired outcome in this debate. Any erosion of sound science will undermine the World Trade Organization's Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) and our global food safety system. ICGMA is concerned that setting Codex standards based on political pressures will promote those same illegitimate barriers to agricultural trade that the SPS Agreement strives to proscribe. ICGMA is supportive of advancing labelling standards for foods, whether developed through modern biotechnology or another method, if there is a change in nutritional composition or if an added component is toxic or allergenic. These regulations are based on the quantifiable chemical characteristics of the food product and not the method of production. This type of standard is objective, science based, verifiable, and enforceable because the chemical properties of the food can be measured, confirmed, and defended.</p>

Organization	Date	Extracts from News Releases
		<p>ICGMA continues to strongly oppose extending mandatory labelling to all products derived through the use of modern biotechnology. Such labelling violates the standard of being objective, verifiable, or enforceable. Real hazards are found in the product and not in the process by which the product was made. Advancing Codex standards outside these sound scientific principles distracts attention from the legitimate health, safety, and nutritional issues, particularly for developing countries, key areas that Codex strives to emphasize and support.</p> <p>In Conclusion: ICGMA members recognize that labelling serves important purposes. For consumers buying packaged foods, the label is their single most important information resource. Most importantly, it provides consumers with easy-to-find vital safety, health and content volume information. For food manufacturers, it contributes to consumers' first impression about the product and communicates information that helps them make their purchase decisions. It should be noted that today not all information is conveyed to consumers through labels, given that different consumers care about different things and label space is limited. Food manufacturers use 1-800 phone numbers, web based information, brochures and other forms of communication to address consumer-specific needs. In grocery stores, where hundreds and thousands of products compete for consumers' attention, labels must continue to provide those consumers with real health and safety information. They must be effective signals that can be easily read and understood. Unnecessary information on a label can drown out critical messages, or worse, confuse consumers.</p> <p>Nearly a century of experience at regulatory agencies around the world has yielded the basic elements of successful consumer protection regulation. The legal system should prohibit product claims that deceive consumers and should require that manufacturers have the evidence appropriate to support any claims they make. Regulatory standards should require disclosure of information that is necessary to inform consumers about such basics as the quantity, nutrition, and safety of the contents of a package. While the protection of the consumer requires essential information to be displayed on food labels, the effectiveness of the label requires that other claims remain voluntary, subject only to the requirement that they be accurate and substantiated. A food labelling standard that strikes this balance not only protects consumers but also preserves their ability to choose, because it permits manufacturers to communicate effectively to them.</p>
<p>GMA Grocery Manufacturers of America</p>	<p><i>April 12, 2004</i></p> <p><i>March 29, 2004</i></p> <p><i>March 23, 2004</i></p> <p><i>March 17, 2004</i></p>	<p>* The Grocery Manufacturers of America (GMA) applauded the Maryland General Assembly for rejecting a proposal to impose a \$16 million snack tax on state residents. "The Maryland legislature correctly realized that snack taxes are an ineffective means of increasing state revenue," said GMA Vice President of Government Affairs Elizabeth Avery. "In addition, selectively taxing foods disproportionately affects low-income families who can least afford to pay more for groceries."</p> <p>* The Grocery Manufacturers of America (GMA) urged members of the U.S. Dietary Guidelines Advisory Committee to provide Americans with consistent and relevant information about nutrition. "The fact is that most consumers become overwhelmed when confronted with advice to drastically change the way they eat or live in order to improve their health," said GMA Director of Scientific and Nutrition Policy Alison Kretser, MS, RD. "Rather than setting unrealistic nutrition standards, the Committee should consider the feasibility of adhering to the revised Guidelines. This approach could help reduce the likelihood of Americans continuing to disregard the Guidelines as being impossible to implement or achieve."</p> <p>GMA also provided the Committee with examples of the food and beverage industry's efforts to reduce the amount of sodium in products and to provide lower-sodium alternatives. "GMA member companies' real-world experience with the introduction and marketing of lower-sodium foods has shown that consumers consistently reject them based on taste preferences," Kretser explained. "However, our companies continue to research ways to make incremental but cumulative reductions in sodium content without compromising the taste or quality consumers expect."</p> <p>* The Grocery Manufacturers of America (GMA) today congratulated the Maryland House Ways and Means and Appropriations Committees for rejecting a proposal to impose a snack tax on state residents.</p> <p>* The Grocery Manufacturers of America (GMA) today denounced legislative efforts to reinstate a regressive snack tax in Maryland without public input or open debate. "Arbitrary and selective taxes on foods such as the one proposed by the Maryland Senate are poor methods for generating state revenue because they disproportionately effect low-income families who can least afford to pay more for their groceries," said GMA Vice President of Government Affairs Elizabeth Avery. "Additionally, arbitrary taxes that increase the cost of some foods but not others may unfairly discriminate against an individual's food choices."</p> <p>On March 12, the Maryland State Senate Budget and Taxation Committee voted to reinstate a five percent sales tax on nuts, chips, pretzels, and other snack foods. This tax originally was implemented in 1992, only to be repealed in 1996, because it was found to be an inefficient and</p>

Organization	Date	Extracts from News Releases
		unreliable source of state income.
	<i>March 12, 2004</i>	* The Department of Health and Human Services and the U.S. Food and Drug Administration today called on American consumers to focus on calories and energy balance to maintain a healthy weight, a course of action supported by the Grocery Manufacturers of America (GMA). "The administration's emphasis on energy balance – that calories in must equal calories out – is critical," said GMA Director of Nutrition and Scientific Policy Alison Kretser, MS, RD. "Maintaining a healthy weight comes down to balancing what you eat with what you do. GMA's member companies will most certainly accept Sec. Thompson's challenge to improve nutrition labelling to make it easier for consumers to achieve their health and nutrition goals."
	<i>March 4, 2004</i>	* Grocery Manufacturers of America (GMA) said consistent standards for dietary guidance statements will help Americans make the U.S. Dietary Guidelines a part of their daily lives. Companies currently do not make wide use of such nutrition claims because the FDA has not provided a consistent definition for them. An example of a dietary guidance statement is: "Fruits and vegetables can help lower your risk of certain types of cancers." These claims provide consumers with general information about establishing healthy dietary patterns. "GMA's member companies are a critical source of nutrition information for consumers," said GMA Director of Nutrition and Scientific Policy, Alison Kretser, MS, RD. "By establishing clear parameters for the use of dietary guidance statements in product labelling, FDA will give the food and beverage industry an additional tool to help consumers establish nutritious dietary patterns based on the U.S. Dietary Guidelines."
	<i>March 2, 2004</i>	* Grocery Manufacturers of America (GMA) President and CEO C. Manly Molpus today testified before a Senate hearing on combating obesity in America. "The food and beverage industry is committed to helping reverse the growth of obesity," Molpus testified. "We provide consumers with safe, nutritious, enjoyable, and affordable foods, and we are working with government and other stakeholders to tackle this important public health challenge...The challenge for America's food and beverage manufacturers is to provide and promote the foods and beverages that make eating not only healthy, but enjoyable," said Molpus. "And consumers will see even more of these products in the months ahead."
	<i>February 11, 2004</i>	* The Grocery Manufacturers of America (GMA) said that National Academy of Science (NAS) recommendations to severely curtail sodium from current consumption levels are unnecessary and unrealistic for ordinary Americans. In its report, Reference Intakes for Water, Sodium Chloride, Potassium, and Sulfates, the Institute of Medicine/NAS recommends that consumers reduce their sodium intake by more than 50 percent from their current consumption levels. Rather than basing the recommendations on the needs of the majority of Americans, the report bases its recommendations on research showing the benefits of low-sodium diets for the 25 percent of the U.S. population that is sodium sensitive. "When establishing nutrition recommendations for the entire American population, the NAS and other government agencies should set achievable goals," said GMA Director of Nutrition and Scientific Policy Alison Kretser, MS, RD. "The NAS's recommendation to reduce sodium intake from 2400mg to as few as 1500mg is not only extreme – most Americans consume roughly 3300mg per day – but also unnecessary for the majority of Americans."
	<i>January 20, 2004</i>	* The Grocery Manufacturers of America (GMA) and les Confédération des Industries Agro-Alimentaires de l'UE (CIAA) are pleased that the World Health Organization (WHO) Executive Board has taken action on the draft Global Strategy on Diet, Physical Activity, and Health and that it will be considered for approval in May at the World Health Assembly. Obesity is a serious public health issue, and we are committed to doing our part in combating it in concert with the EU, WHO, and member states.

Trade associations also deal with issues of:

- Nutritional and other forms of labelling;
- Food safety;
- Supporting social marketing initiatives, such as “5 to 10 a Day” fruit and vegetable consumption recommendations;
- Food product health claim monitoring;
- Snack or “fat” taxes.

In many cases, trade associations’ positions do not materially differ from NGOs’ and the WHO’s published positions. However, for issues such as “fat” taxes, industry associations’ philosophies may differ from those of the groups mentioned above.

C. The Fast Food Restaurant Sector

A 1980 article in the *Globe and Mail* pointed out that the average North American eats half of his or her meals in restaurants (Lasota, 1980). The article also noted that most of those away-from-home meals were consumed at fast food restaurants. Time constraints and consistency were the factors associated with the increased popularity of fast food in North America. However, although fast food meals help to provide the daily requirements for some nutrients (i.e., protein and some vitamins and minerals), it has long been recognized that fast food restaurant menus contain an excess of calories, which may contribute to obesity.

In the early 1980s, in an effort to grab market shares from McDonald’s, some fast food chains identified individuals between the ages of 25 and 40 as the fastest growing segment of the population, and began offering alternatives that would appeal to them. Among these were salad bars, which were designed to respond to young adults’ concerns about nutrition. During that period, fitness was in vogue, and the federally sponsored fitness program, had a participation rate of almost 20 percent of the population, up from 5 percent at the beginning of the 1970s. At the same time, however, in Canada eating out had become incredibly popular, and throughout the country there were 350 McDonald’s restaurants, whose combined sales in 1980 were expected to exceed \$500 million in 1980 (Taylor, 1980).

It was clear that consumers wanted to move to healthier eating. Thus, some companies expanded beyond salad bars and began offering fresh fruit, yoghurt, bran muffins, and other items. In 1984, David Harris, director of member services for the Canadian Restaurant and Foodservice Association, said, "There's definitely a trend to lighter, fresher, more nutritious foods...it appears this will continue, in the short term anyway." Meanwhile, in 1984, a newspaper article indicated that McDonald's had not offered many healthier choices. It stated, "McDonald's tried salad bars in two Toronto outlets several years ago and found they didn't work. Since then, its major concession to calorie-conscious consumers has been the introduction of Diet Coke and 2 per cent milk" (Roseman, 1984).

Continued declines in red meat consumption during the early 1980s, and particularly in beef consumption, led the industry to think about changing the traditional burger meal. Thus, it expanded its offerings in order to ensure that it could continue to increase its share of the food dollar. In 1980, McDonald's introduced its Chicken McNuggets in the U.S., and, after that, almost all of its competitors followed the lead. By the end of 1984, Wendy's was launching its chicken entry into to what has been termed the "Chicken Challenge Wars." Although chicken was viewed as a healthier choice than beef, the reality is that the breaded, deep-fried pieces of chicken that most fast food restaurants serve do not qualify as significantly healthier options. By the beginning of the 1990s, McDonald's had jumped on the health bandwagon, and it began showcasing its reduced fat McLean Deluxe burgers and its salads and low-calorie yoghurt cones. Wendy's also began to offer better-for-you items, such as salads and chilli, but these were not actively promoted as healthy items. Doug Woodside, vice-president of marketing for Wendy's Restaurants of Canada, Inc. said in 1991, "I'm not about to abandon my large hamburgers and my French fries" (Hogarth, 1991). Kentucky Fried Chicken reacted to the nutrition trend by compressing its name in order to avoid the negative connotations of the word "fried," which at least one commentator likened to an obscene word:

"It used to be Kentucky Fried Chicken—one of America's most recognizable brands. But when having "fried" as its middle name became a PR liability, it transformed itself into KFC. That way, customers wouldn't have to say the f-word when deciding where to eat. Apparently, though, even being called KFC doesn't put enough distance between the company and its deep-fried heritage. It's now calling itself Kitchen Fresh Chicken" (Rector, 2004).

Although the apparent nutrition consciousness pushed restaurateurs to include better-for-you items on their menus, consumers' real demand for them was so poor that fast food chains crossed them off their lists not long after they were launched. This was the case for the McLean Deluxe,

McDonald's low-fat hamburger; KFC's skin-free crispy chicken; Pizza Hut's low-fat pizza; and Burger King's steak sandwich made with low-fat meat and sea alginate. Instead of flocking to eat the healthy alternatives, consumers seemed more responsive to additional high-fat items: McDonald's launched a Triple Cheeseburger and "dinosize" fries in 1993; Pizza Hut offered the Bigfoot, a rectangular pizza measuring two feet by one foot; Domino's Pizza introduced the 30-slice Dominator; and Burger King enlarged its fish sandwich by 43 percent. People appeared to want more for their money, and the industry responded: "[S]erving up giant sizes is just another way to get consumers' attention. Offering a bigger size is a new way to market an old product," said Mark Rowan, a KFC vice-president in Texas.

In 2002, U.S. Surgeon-General David Satcher declared a "call to action" on obesity, and compared obesity to smoking. Many Americans felt that their huge serving sizes were to blame. Young and Nestle (2002) carried out a study to identify historical changes in the sizes of marketplace foods. They found that food portions began growing in the 1970s, expanded in the 1980s, and have continued to increase with body weights. Their evidence includes the following: The only size of French fries that McDonald's offered in the mid 1950's was as small as one third of the largest size available in 2001, and what McDonald's called "Supersize" fries in 1998 became merely "Large" in 2001. Serving sizes in other countries are smaller than in the U.S. "Extra Large" soda portions in London, Rome, and Dublin are the same as the "Large" size sold in the U.S. Young and Nestle point out that increased consumption of fast foods contributes to increased caloric intake, and this problem can only be made worse by the "supersizing" of menu items.

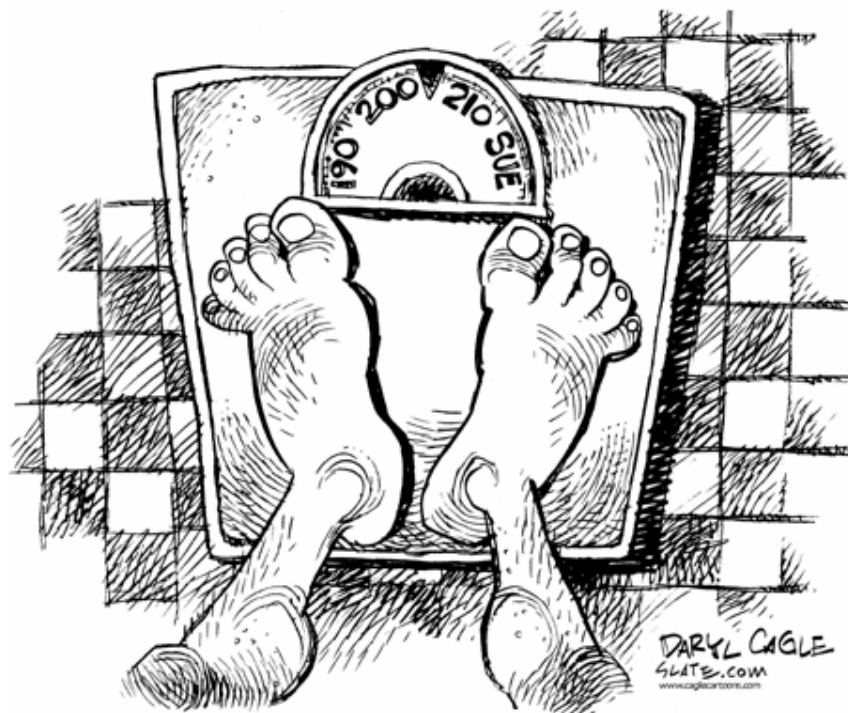
Although in the early 1990s the leaner burger was not a hit for McDonald's, in 2002, the company again decided to offer healthy alternatives and launched a "Light Choices" menu category. Bill Johnson, president and chief executive of McDonald's Canada said, "Canadians' eating habits have changed in the last couple of years ... We introduced salads and the McLean Deluxe (a reduced fat beef burger) years ago. People didn't go for them. Now, they want them" (Shaw, 2002). Other entries included a fruit and yoghurt parfait, four salads, a veggie burger, and a grilled chicken sandwich on a whole-wheat bun.

It is not totally clear whether this action reflects the company's interest in offering healthier food items in Canada, or if it is simply a reaction to competition from one of Canada's largest fast food chains, Tim Horton's. McDonald's sales climbed to \$2.24 billion in 2001, up from \$2.14 billion in 2000, but Tim Horton's has experienced explosive growth in recent years. The company has jumped from being Canada's fifth-largest quick-serve chain in 1998 to become its second largest in 2000, with

sales of \$2.12 billion in 2001 (Shaw, 2002). Other food businesses are also introducing their own healthy items: Burger King has salads and the grilled, not-breaded, Chicken Whopper; Wendy's has a complete line of salads; and Tim Horton's offers some low-fat bakery items, soups, and sandwiches. Subway has very effectively exploited the trend toward health-consciousness. In 2002, it began offering a broader range of healthy food options, including a line of sandwiches that contain six grams of fat or less and feature ingredients such as fresh vegetables, whole-wheat grains, and low-calorie sauces. Its healthy image was enhanced by advertising the fact that a college student went from 425-pounds to 180-pounds by eating a diet of two Subway sandwiches daily.

At a time when fast food chains increased the number of good-for-you alternatives they offered, a group of heart disease sufferers sued an array of fast food franchises, including Burger King, Wendy's, Kentucky Fried Chicken, and McDonald's. This move has made companies aware of the importance of providing consumers with nutritional information. Health advocates and lawyers increasingly try to place the blame for the U.S.'s growing obesity problem on fast food companies, and are borrowing tactics that opponents of smoking have used successfully against tobacco companies (*New York Times*, 2002). In 2002, in New York, two teenagers filed a lawsuit against McDonald's, stating that the company had failed to provide information about the health risks associated with consuming its products.

Figure 7: Fast Food Restaurants are Motivated, in Part, by the Fear of Lawsuits (Cartoon copyright 2003, Daryl Cagle)



Fast food restaurants have found that the public now embraces their low-fat menu items. Additionally, many companies are trying to respond to consumer nutrition concerns by highlighting the ways in which they are making their traditional offerings more healthful. Some recent moves by the fast food industry include:

- McDonald's announcement that it reduced the trans-fatty acid content in its fries by 48% and saturated fat by 16% (Dorfman, 2002).
- McDonald's began offering more Happy Meals with fruits, vegetables, and yoghurt, in an effort to make its menu healthier (Associated Press, 2003).
- McDonald's began promoting healthy lifestyles and providing expanded product information (Poole, 2003).
- In France, McDonald's has put up signs stating that its food should not be eaten more than once a week, and, in England, it offers fruit instead of fries (Mitchell, 2003).
- Taco Bell offers a "fresco style" option that comes with most of its menu options, and it lets customers substitute salsa for cheese and sauce (Cohen, 2003).
- Burger King launched a line of low-fat, fire-grilled, baguette-style chicken sandwiches (Cohen, 2003).
- Wendy's International, Inc. is, in some markets, offering milk as an alternative to soda in kids' meals (Cohen, 2003).
- McDonald's announced a pilot project at 650 of its restaurants in the United States. Posters will tell customers how much fat and how many calories and carbohydrates are in its meals, and will provide information about how to cut down on these (Mitchell, 2004).
- Subway began selling low-carbohydrate wraps that bear the full endorsement of the Atkins Diet Organization (Mitchell, 2004).
- Burger King announced the bunless Whopper (Toman and Langford, 2004).
- McDonald's launched an Atkins-approved lunch, which contains a quarter-pound hamburger with no bun (Picard, 2004).

Most fast food chains have attributed these changes to consumer demand for healthier alternatives. However, other factors, such as an increasing risk of lawsuits, possible regulations, and deteriorating images that need to be improved may affect their decisions.

Whether fast food chains are taking responsibility because they care about customers' well-being or because investors are pushing them, the sector has responded. Most chains have introduced new products or have highlighted the nutrition contents of food items already on their menus. Some have even created health councils in order to appear more responsible. Table 8 contains extracts from the press releases (as obtained from company websites, listed in Appendix B) of some fast food companies that have a presence in Canada.

Table 8: Nutrition-Related Content in the Press Releases of Some Fast Food Companies Present in Canada

Company	Date	Press Release Summary
Wendy's	<i>December 2, 2003</i>	* Greg Dollarhyde, President/CEO of Baja Fresh, Wendy's wholly owned subsidiary, said, "It's our job to offer dishes that are nutritionally relevant and flavourful, and to provide information about protein, fat, calorie and fibre content so that customers can make an informed choice about what they are eating."
	<i>November 7, 2003</i>	* "Customers have always been able to customize our menu to make it compatible with whatever diet they follow...The demand for high protein fare has become so high, we are introducing Steak Picado and Chicken Picado to support this popular diet approach and lifestyle choice."
	<i>September 22, 2003</i>	* Wendy's will offer eight-ounce, single serve plastic containers of reduced fat (2%) white or low-fat (1%) chocolate milk as Kids' Meal beverage alternatives at 420 Wendy's restaurants in Columbus, Ohio; Miami; Philadelphia; and Raleigh, N.C. As part of this effort, Wendy's will also offer a fresh fruit cup—with honeydew melon and cantaloupe chunks—as a Kids' Meal option instead of French fries. Customers will not be charged extra for selecting milk or a fruit cup as part of their Kids' Meal order. "Since day one, Wendy's has been known as a place for families," said Tom Mueller, Wendy's president and chief operating officer. "We don't take this loyalty lightly, and we're actively working to further enhance our menu with quality options that kids want and parents appreciate."
	<i>September 8, 2003</i>	* "We're proud of the food we serve at Wendy's. To learn more, please ask for a nutrition guide or visit wendys.com." This statement will begin appearing on carryout bags and tray liners at Wendy's Restaurants throughout North America later this month. It's part of a comprehensive effort to make consumers aware that nutrition and ingredient information is readily available. "We have a strong story to tell about the quality, variety, and nutrition of our food, and we're using a number of approaches to get the word out and better serve our customers," said Tom Mueller, Wendy's president and chief operating officer. "We've provided nutrition information in our restaurants since the late 1970s, and we believe it's important that we do everything we can to assist our customers in making informed choices regarding their dietary needs."
	<i>August 22, 2003</i>	* Wendy's Old-Fashioned Hamburgers® Restaurants is stepping up efforts to highlight food options for people who are watching their fat and calorie intake. Wendy's currently is testing the promotion of a variety of meal combinations in New York; Miami; Philadelphia; Columbus, Ohio; and Seattle. These meals feature food items that have been on Wendy's menu for many years, but the company is now talking about them in a different way. "In today's rapidly changing world, our customers are our compass. We listen intently to their needs, and continue to follow their lead," said Don Calhoon, Wendy's executive vice president, marketing. "More than ever, they want food options that are tasty and nutritious. We believe this provides an excellent business opportunity because Wendy's has always offered a wide variety of high quality, satisfying and nutritious food choices, from salads and made-to-order sandwiches to chilli and baked potatoes. We're not only aggressively pressing forward with new product research and development, we are actively exploring new ways to showcase the strengths of our main menu." Calhoon said.
Taco Bell	<i>January 6, 2004</i>	* Launched August 2003, Fresco Style substitutes cheese and sauce with a savoury five-calorie zero-fat Fiesta Salsa on nearly all Taco Bell menu items at participating restaurants nationwide. Ordered Fresco Style, a traditional grilled steak soft taco with 290 calories and 17 grams of fat contains 170 calories and five fat grams, an approximate 70 percent fat reduction. Now, with this new option, Taco Bell offers 15 menu items with less than ten grams of fat. Nutritional brochures with Fresco Style information are available at Taco Bell® restaurants.
McDonald's	<i>October 8, 2003</i>	* McDonald's Corporation announces Worldwide Nutrition Director. "Helping encourage our customers to eat smart and be active is an ongoing commitment that McDonald's continues to make to our customers around the world," said Ken Barun, corporate vice president of McDonald's Corporation. In April, McDonald's launched a worldwide leadership initiative aimed at helping families live balanced, more active lifestyles by focusing on menu choice, physical activity, and education. Additionally, McDonald's has formed a global Advisory Council comprised of leading experts in health, fitness, and nutrition to guide the company in its efforts. McDonald's is also collaborating with leading authorities in order to help address consumers' lifestyle needs.
	<i>May 21, 2003</i>	* McDonald's Corporation announced its newly created Global Advisory Council on Healthy Lifestyles. The Advisory Council is comprised of experts in the areas of fitness, nutrition and active lifestyles. This independent group will help guide the company about activities that address the need for balanced, healthy lifestyles. "We look forward to the Council's vigorous and independent input and thinking as we work together to address the needs of consumers around the world," said Corporate Vice President Ken Barun. "Their expertise will be invaluable as we continue to develop activities and programs that address this important subject."
Burger King	<i>January 13, 2004</i>	* For 50 years, guests at BURGER KING® restaurants have been able to tailor their meals to their personal taste preferences through the company's HAVE IT YOUR WAY® philosophy ("Hold the pickles, hold the lettuce ..."). Today, Burger King Corporation is introducing a new way to HAVE IT YOUR WAY®. Guests can now make menu choices based on their nutritional eating styles ("Hold the bun, hold the mayo ..."), whether they are eating low-carb, low-fat or counting calories. "Consumers who have adopted popular diets like Atkins and South Beach have asked for menu choices that empower them to dine at BURGER KING® restaurants where they can continue to enjoy our delicious Fire-Grilled burgers and other Fire-Grilled foods.

Company	Date	Press Release Summary
	<p>December 22, 2003</p> <p>November 13, 2003</p> <p>October 13, 2003</p> <p>July 11, 2002</p> <p>March 14, 2002</p>	<p>Our HAVE IT YOUR WAY® heritage puts the Guest in charge, and our new Fire-Grilled menu offerings provide nutritionally relevant choices and great Fire-Grilled taste," said Glad Markunas, Senior Vice President of Consumer Insights and Strategic Branding, Burger King Corporation.</p> <p>* Burger King Corporation appoints Dr. Joanne V. Lichten as Chief Nutritionist. This new position fills a critical role for Burger King Corporation and recognizes the importance of nutritional information and choices to the 7.9 million guests around the world who visit BURGER KING® restaurants each day.</p> <p>* "Re-launching our website and its Nutrition Guide is a clear extension of Burger King Corporation's HAVE IT YOUR WAY® philosophy," said Russ Klein, chief marketing officer, Burger King Corporation. "BURGER KING® restaurants have always been focused on putting the Guest in charge, giving them choices and now information to meet their personal tastes and nutritional needs. Our on-line Guests can now easily find in-depth nutritional information on their favourite menu items and learn how they fit into their personal lifestyles."</p> <p>* Burger King Corporation announced the immediate availability of the Fire-Grilled Savoury Mustard Chicken Baguette, the second sandwich in the company's new line of low-fat Fire-Grilled Chicken Baguettes. This product line consists of three sandwiches, each with only five grams of fat and 350 calories. "We are encouraged by the positive response to the Fire-Grilled Santa Fe Chicken Baguette and anticipate continued consumer demand with this line of fresh, made-to-order sandwiches as we offer our guests yet another great-tasting, low-fat option with the Fire-Grilled Savoury Mustard Chicken Baguette," said Brad Blum, chief executive officer of Burger King Corporation. Guests can also choose to enjoy their Fire-Grilled Chicken Baguette sandwiches in new Lite Combo Meals that include a freshly made garden side salad and 16.9 ounce bottled water, or as part of a traditional value meal with medium fries and a medium soda.</p> <p>* Burger King Corporation (BKC) and its franchisees are breaking new ground in the fast food category with the national launch of the Chicken Caesar Salad. "These are very exciting product introductions and menu enhancements that our customers told us they want from BURGER KING®," said Christopher E. Clouser, executive vice president and chief global marketing officer for Burger King Corporation. "We are constantly looking for ways to add new taste and variety to our menu. This best-in-class salad joins other recent menu innovations, such as the Chicken WHOPPER® sandwich and BK VEGGIE™ burger, providing customers unique, fresh and healthy options."</p> <p>* Burger King Corporation (BKC) and its franchisees are breaking new ground in the fast food category with the national launch of the BK VEGGIE™ burger — the first veggie burger available nationally at a quick service restaurant chain.</p>
<p>KFC</p>	<p>October 28, 2003</p> <p>September 16, 1999</p>	<p>* KFC Corporation announced that fried chicken can, in fact, be part of a healthy diet. "We want to set the record straight. Consumers should no longer feel guilty about eating fried chicken," said Scott Bergren, KFC's Executive Vice President, Marketing and Food Innovation. "Consumers will be surprised to learn they can enjoy fried chicken as part of a healthy, balanced diet. Of course, they should eat all food in moderation, and balance that with an appropriate amount of exercise - it's all about energy in, energy out." When it comes to a healthy diet, numbers matter. A KFC Original Recipe Chicken Breast has less than half the fat and fewer calories than a Burger King Whopper. A KFC Original Recipe Chicken Breast has 19 grams of fat and 380 calories, compared to a Burger King Whopper with 43 grams of fat and 710 calories. Until now, most people probably didn't realize they can enjoy an entire freshly prepared meal at KFC (Original Recipe Chicken Breast, mashed potatoes and gravy and corn on the cob) for less fat and calories than a Burger King Whopper. With more and more Americans on diets and increasingly health-conscious, we thought it was important to get this information to consumers so they can judge for themselves how to make KFC part of their healthy lifestyle," Bergren said.</p> <p>By removing the skin and breading from a KFC Original Recipe Chicken Breast, the fat content is reduced to only three grams, with only 95 milligrams of cholesterol, zero grams of trans fatty acids and 140 calories. When customers go 'skinless' and add two lower fat sides - such as mashed potatoes and gravy or baked beans - they can enjoy a number of freshly prepared meals for 10 grams of fat or less.</p> <p>* To help consumers maintain their healthy diets while eating on the go, KFC® will introduce two sandwiches in September that are low in fat but loaded with taste. The Tender Roast® sandwich features the savoury, slow-roasted taste of KFC's popular Tender Roast chicken and contains 270 calories and 5 grams of fat (177 grams of total weight), when ordered without the sauce. The tangy Honey BBQ sandwich has 310 calories and 5 grams of fat (178 grams total weight). The sandwiches are freshly made and served on a bakery-fresh Pepperidge Farm bun.</p>

D. Summary

It is clear that not all processing firms or restaurants attach the same level of importance to nutrition-related issues, either because the individual firms believe that their products are satisfactory and require no public relations attention, or because they are unwilling to raise concerns about existing products through the introduction of new products. Examples of this include the concerns that KFC faces about its name and the fact that Arby's website lacks specific health information. Many firms appear to respond to widespread media coverage about the links between nutrition and health by developing new products, adopting labelling, or providing more information to consumers. Industry seems to be more receptive to positive interventions, and is happy to include health claims with products, rather than supporting "fat" taxes. Processing firms and fast food restaurants will continue to introduce new products; however, their main areas of focus will remain on their core businesses and existing products. A firm might, for example, continue to spend the bulk of its advertising budget on traditional products, and will invest only in product launch advertising for new products. Given that food processors and restaurants are significant forces in the distribution of foods to consumers, cooperation from this sector is integral to developing and maintaining any successful behaviour modification strategies that are aimed at reducing obesity or other health-related diseases.

As this diagram illustrates, it can be quite difficult to determine the effects of public policy on the health of Canadians in general, and on dietary choice in particular. In the past, government policies designed to pursue specific goals were made in isolation of one another, particularly if they fell under the purview of different legislative committees or government agencies. Although this piecemeal approach is the obvious result of specialization among policymaking bodies, it has often lead to unintended consequences. The dietary choices of Canadians are potentially affected by policies as varied as those regarding agriculture, transportation, education, unemployment, zoning, trade liberalization, and revenue generation. The need to better coordinate policymaking across jurisdictions, and to examine virtually all public policy through a lens of health and nutrition, has become more apparent in today's environment of concern over issues such as high obesity rates and increasing health care costs.

Before identifying the impact of current and historical public actions, it is useful to review what various government bodies and NGOs recommend in order to reduce health care costs. It is also interesting to note what happens in different countries, as their approaches (i.e., taxes versus subsidies) vary, as do levels of public involvement. Some examples of these differences are provided in the first section below. The second section will provide a brief discussion of Canadian public policies and their potential impacts, while the third section will examine current obesity legislation and regulation.

Additionally, there is a great deal to be learned from the tobacco literature. Although the physiology of tobacco consumption is not directly comparable to the ingestion of food, there are significant overlaps between the public's desire to change smoking behaviour and those desires to change food consumption behaviour. A detailed discussion of tobacco policies and a review of the literature on the impact of these policies is provided in the fourth section below. The final section will provide a summary of exisiting knowledge about the impacts of food related policies, both here and abroad.

A. Recommendations about Potential Food-Related Policy Tools Designed to Change Consumption Behaviour

In an effort to provide a review of the directions that policy recommendations are taking around the globe, we compared diet- and health-related policy recommendations from various agencies in Europe, Australia, and Canada. Table 9 provides a summary of recommendations from the World

Health Organization (in specific regards to Europe), the Australian National Health and Medical Council, and the Canadian Institute of Health Information. Of particular note is the focus in the European recommendations on agricultural policies and societal outcomes as they relate to health and obesity. All of the documents studied seem to agree about the following:

- Solving health problems requires a mix of interventions related to food and physical activity.
- It is important to target health and eating messages to schools and children.
- The food industry must be involved in marketing, promotion, and in providing health claims. Industry participation is a necessary part of the solution.

Table 9: European, Australian, and Canadian Policy Recommendations Regarding Diet and Obesity

Europe (WHO)		Australia		Canada	
Issue	Strategy	Issue	Strategy	Issue	Strategy
Diet Interventions	<ol style="list-style-type: none"> 1. Establishing national food-based dietary guidelines 2. Providing official government support, guidelines and funds allocated to nutrition 3. Developing a monitoring and evaluation system for action plans related to nutritional improvement 	Diet and Obesity	<ol style="list-style-type: none"> 1. Nutrition promotion 2. Food labelling 3. Workplace, school, and community food recommendations 4. Promoting physical activity 	Diet and Obesity	<ol style="list-style-type: none"> 1. Develop urban design to improve activity levels, emphasize regular physical education, reduce television viewing time, and establish comprehensive school health programs 2. Enhance public health capacity for education and promotion 3. Invest in schools, in order to reduce their reliance on unhealthy food services, and provide opportunities for physical activity 4. Work with the food industry to monitor and regulate food marketing (product placement, and advertising)
Agricultural Policies	<ol style="list-style-type: none"> 1. Phase out consumption aid to high-fat dairy products 2. Limit school milk assistance to low-fat milks 3. Introduce a school program for fruits and vegetables 4. Change agricultural support to favour fruits and vegetables 5. Remove support for wine consumption 6. Remove tobacco subsidies 7. Manage the adverse effects of EU promotion of olive oil on the sustainability of olive production 	Food Policies	<ol style="list-style-type: none"> 1. Focus on impact of food policies on diet 2. Examine food-related interventions for dietary effects 	Agricultural Policies	There is a need for better integration between policy makers across sectors, including agriculture.

Europe (WHO)		Australia		Canada	
Issue	Strategy	Issue	Strategy	Issue	Strategy
Informed Choice	Labelling of meat: Only muscle meat can be called meat, and there is a need for fat content rules	Obesity Related to Non-insulin Dependent Diabetes	Programs suggested subject to cost-benefit analysis: <ol style="list-style-type: none"> 1. Surgery for the seriously obese 2. Behaviour modification for the seriously obese 3. Group programs for overweight men 4. Group programs for women with impaired glucose tolerance 	Possible Programs to Examine	<ol style="list-style-type: none"> 1. Expand existing health system initiatives, such as surveillance, health insurance, public education, and health promotion 2. Investigate policies such as labelling, restricted sales, and taxation (since these have been effective in controlling tobacco use)

Source: World Health Organization (2002, 2004); National Health and Medical Council (1997); and Canadian Institute for Health Information (2003, 2004).

Although official publications released by the Canadian Institute for Health Information (2003, 2004) do not contain any recommendations regarding specific agricultural policies, other groups in Canada have more explicitly addressed the linkages between agricultural policy and food consumption and health. Perhaps one of the most substantial sets of recommendations comes from a Toronto Food Policy Council (1998) publication entitled “Cutting Out the Fat.” An excerpt from its executive summary is reproduced below:

“We recommend a three-stage process of transition. Our policy and regulatory apparatus is a product of long-standing beliefs and assumptions. Its structure has been assembled over many years, generally following a pattern of incremental additions, with the overall coherence of the structure rarely assessed. Consequently, we believe that an evolutionary transition to the new approach proposed here is most appropriate.

In this framework, Stage 1 strategies involve making minor changes to existing practices to help create an environment somewhat more conducive to the desired change. The changes would generally fit within current policy making and regulatory activities, and would be the fastest to implement. Second stage strategies focus on the replacement of one practice, characteristic or process by another, or the development of a parallel practice or process in opposition to one identified as inadequate. Finally, third stage strategies take longer to implement and demand fundamental changes in the use of human and physical resources. This final, or redesign stage, is unlikely to be achieved, however, until the first two stages have been attempted. Ideally, strategies should be selected from the first 2 stages for their ability to inform analysts about redesign (the most underdeveloped stage at this point) and to contribute toward a smooth evolution to the redesign stage.

First stage:

1. Make nutrition labels on all processed foods mandatory, and ensure that they contain information on total calories, calories from fat, total fat, saturated fat, cholesterol, and total carbohydrates.
2. Rewrite certain Food And Drugs Act Regulations so that fat production and distribution is discouraged, and consistent labelling of fat content encouraged:
 - a) Change all prepared meat food definitions so that the product can contain no more than 25% fat by weight.
 - b) Change dairy product food definitions so that maximum fat contents are specified for each type of cheese.
 - c) Change all product labelling systems so that the label contains both the grams of fat and the percentage of calories consumed as fat (consistent with Canada's Healthy Eating Guidelines).
 - d) Require labelling of all fatty ingredients.
 - e) Require labelling of trans-fatty acids.

3. Healthy Lifestyle Restaurant programs should become part of the Ministry of Health's mandatory program guidelines. Such programs reward restaurants offering a significant number of low-fat menu items with public recognition. They have proved very popular with restaurateurs in municipalities offering them.

4. Educational programs with demonstrated success in reducing consumer consumption of fat should be expanded, including workplace intervention and skills for food shopping programs.

Second stage:

5. Implement strategies to require full consumer information about food:

a) Labels that tell consumers how their food product complies with the government's healthy eating guidelines (e.g., "Eating this product several times a week is consistent with Canada's Guidelines for Healthy Eating" or something to that effect); this might also be achieved with a colour coding system (e.g., different colours for high, medium and low compliance). Restaurant menus would also be required to provide such colour coding to permit patrons an opportunity to evaluate how the meal they were about to order compared with recommended daily intakes.

b) Grading standards based more on nutritional than cosmetic criteria.

c) Just as cigarette advertising has been restricted because of the serious health effects of smoking, advertisements for junk food and those advertisements that play on people's concerns about their body image and social acceptance should be eliminated. The body image issue is related to both total dietary intake and fat consumption. Anorexia and bulimia are becoming serious health issues, particularly among teenage women, and fears about obesity are a major source of the problem. Many societal factors contribute to those fears and food advertising is a contributory one.

6. Transition programs (subsidies, tax credits, farm services) to encourage processors to move toward lower fat foods. There are a number of existing programs for food processors, none of which are commodity specific or have nutritional value of the product as a criterion. Just as the dairy subsidy reduced milk costs for processors and dairy product costs for consumers, subsidies or tax credits could be available to processors sourcing lower fat product, and sustaining its low-fat quality through processing.

7. Change taxes on food so that fresh foods are not taxed and processed ones (clearly defined) are. Under current rules, a takeout salad will be taxed, but french fries may not be. Such anomalies should be eliminated, to ensure that purchase of fresh foods are favoured by the tax system.

8. Examine the feasibility of by-laws, zoning restrictions and other measures, similar to those used to restrict access of young people to tobacco, to limit access to high fat and highly processed foods around schools, including restricting the sale of high fat and highly processed "fast" foods in vending machines and stores within close proximity of schools.

9. Under the Food and Drugs Act, require, as the Netherlands has, that the trans-fatty acid content of most margarines be reduced to 1% within 1 year.

Third stage:

10. Develop demand management and supply coordination systems for optimizing the availability and nutritional value of the food supply for all residents.

Fifteen years ago, the Science Council of Canada proposed that Canada move towards an optimal nourishment scenario, but little progress has been made. Other governments have been more successful. In the 1970s, Norway set out to design its food and agriculture production and distribution system to better promote nourishment and adjusted its policies accordingly. By setting goals and establishing appropriate institutional supports, they have been able to change the way the food is produced and distributed.

They had four main goals:

- 1) to stimulate the consumption of healthy foodstuffs (for example, grains, potatoes and polyunsaturated fats) and decrease consumption of unhealthy ones (for example, saturated fats, refined sugars) in order to reduce the incidence of some chronic diseases;
- 2) to develop guidelines for food production as recommended by the World Food Council;
- 3) to increase domestic food self-reliance from 39% of total calories to 52% by 1990; and
- 4) to promote regional development.

Various tools have been used to achieve these goals: production and consumer subsidies, marketing promotion based on nutritional quality, consumer education programs, improved labelling systems, and legislation to penalize the production of food and drink detrimental to health. However, the government recognized that taste cannot be legislated, and that the marketplace will still play a central role in food purchasing patterns. The Norwegian strategy has produced some positive results. Self-sufficiency reached 50% by 1988, and fat as a proportion of energy in the diet dropped from 40% (1975) to 37% (1987), although some undesirable fats have been inadvertently subsidized. Consumption of whole grains, fruit and low-fat milk is up, and potato and grain quality has improved. A decline in cardiovascular deaths has been partly attributed to the Nutrition Policy. Farmers have achieved income parity with industrial workers.

In the context of this paper, the main implications for redesigning the Canadian food and agriculture system to achieve an optimal diet include:

- a) Continuing the shift in emphasis toward animal production systems that reduce carcass fat. This could involve some combination of reducing concentrates in livestock diets (Norway proposed this), lengthening the growing period, and increasing forage intake. Changes of this nature would have substantial implications for management and design of farms, and for land use since many livestock enterprises in Canada are structured around a high concentrate diet and rapid fattening. Many farms rely on purchased feed and have insufficient land to grow their own grains and forages. Manure disposal is an associated problem on such farms.

b) Focus on fresh food production and minimal processing. Canadians have been consuming more fresh food for some time, and this trend could be supported under an optimal diet scenario. This will require more highly developed regional distribution systems. Some parts of the processing industry would become more seasonal. Certain forms of processing would be discouraged: removal of fibre from grains; bleaching; addition of salt, refined sugar, and food additives; and boiling in fat, oil or water.

c) Demand/supply coordination where national food demand is determined by what provides for optimal nourishment, then supply is coordinated (somewhat like what happens now with supply managed commodities) to meet that demand; foods that do not comply with this scenario are available but are highly priced to discourage excess consumption.

We believe that the implementation of this agenda will significantly help consumers reduce fat in their diets” (Pages 5 – 9).

B. Canadian Public Policies and Their Potential Implications

Agricultural Policy

Despite recent trade agreements that seek to limit policy interference into farming activities, public policy remains highly involved in agriculture and food production. As the health implications of diet become a matter of public concern, agricultural policies’ effects on consumers are likely to become an emerging issue. The Toronto Food Policy recommendations quoted above provides one viewpoint on these linkages. Even though observers such as Haddad (2003), Sims (1998), and Nestle (2002) have identified some of the links between general agricultural policy and food purchasing behaviour, attempts to trace the effects of specific public policies to the quality of the food basket produced by Canadian farms is new in Canada. A qualitative assessment of Canadian agricultural policies undertaken by the authors (not detailed here) suggests that the dietary effects of existing Canadian agricultural policies have both positive and negative implications for consumer health.

This is unsurprising because these policies were put into effect for reasons that had little, if anything, to do with consumer well-being. Canadian agricultural policies have been established to increase fluid milk and poultry prices; subsidize irrigation; grade beef quality in part on fat content; reduce the sale of grain products to foreign markets; and encourage production of sugar beets. The motivations for these programs include such goals as stabilizing farm prices and encouraging development of food attributes that appeal to consumers in export markets. To date, these policies have not been developed with the health of Canadian consumers as a driving concern. We recommend

that quantitative assessment of the dietary impacts of individual agricultural policies on consumers be undertaken. It should be noted, however, that reform of specific policies found to have negative impacts on consumer health will necessarily have distributional consequences that will not be universally popular.

Canada's Food Guide

In 1992, after two years of development, Health and Welfare Canada released the then new “Canada’s Food Guide to Healthy Eating.” When it was released, the Acting Minister of Health, Fred A. Stewart, highlighted the government’s effort to provide a guide that reflected changing eating habits and nutritional knowledge. The guide considered a low-fat and higher carbohydrate diet (Canada NewsWire, 1992). Some of the directional statements used to encourage such a diet include:

- Choose lower-fat foods more often (all products);
- Choose lower-fat milk products more often (milk products);
- Choose leaner meats, poultry, and fish, as well as dried peas, beans, and lentils more often (meat and alternatives) (Health Canada, 2003).

The recent announcement (Nersessian, 2004) that Canada’s Food Guide is to be updated provides an ideal opportunity not just for incorporating new scientific findings regarding food intake and health, but also for reflecting on the interplay between these guidelines and other Canadian policies. Some question whether agricultural policy has made any effort to steer the national food supply in the direction of these recommendations (Kantor in *America’s Eating Habits*, 1999). For example, U.S. policies that heavily subsidize corn production make corn meal, corn oil, and high-fructose corn syrup very inexpensive inputs for processed foods across North America (Consumer Reports, 2004). This helps to keep the price of snack foods and soft drinks low. In contrast, fresh fruits and vegetables enjoy relatively little in the way of price supports.

In Canada, it appears that the interaction between a healthy diet and encouragement to domestic industry to provide that healthy supply is not well understood. Greater cooperation between Health Canada and Agriculture and Agri-Food Canada is a necessary first step to resolving any tensions between healthy food choices and agricultural policy that may have evolved over time, as well as to developing public policy that promotes both the health of Canadians and the economic prosperity of the domestic agriculture and agri-food industry.

Policy in Other Sectors

The impact of public policy on dietary health is not just limited to those policies that are directly related to food production or nutritional recommendations. Food choices can also be affected by policies relating to environmental control, worker safety, antitrust, and general trade policies (Ralston, 1999). Opportunities to increase healthy lifestyles can be affected by urban design strategies and transportation policies (Canadian Institute for Health Information, 2003). Jurisdictions have long exempted basic food items from sales taxes, sometimes with inconsistent implications. Furthermore, tax policies affecting any aspect of household consumption have income effects that may ultimately influence food choices. As the following section highlights, tax policy is now also being widely considered as an explicit tool for guiding dietary choices.

C. Obesity Legislation and Regulation

The recent increased awareness of obesity has been reflected by recent actions in North American legislatures. Since July 2002, when an overweight New York man filed suit against four fast food restaurant chains, there has been a plethora of both media and government attention paid to obesity issues and the ways in which they can be regulated, legislated, and litigated. Some of the proposed legislation directly relates to so-called “obesity lawsuits,” such as a March 2004 vote in the United States House of Representatives in favour of a bill that would prohibit obesity lawsuits. Twenty U.S. states have passed or are considering similar legislation (Holland, 2004).

U.S. state legislatures have also shown a willingness to get involved in setting explicit policies to address the problems and causes of obesity. One of the results of this rush to action may be a staggering patchwork of different laws regarding policy areas that had until recently received little regulatory attention. In just the first eight months of 2003, bills to study obesity problems were introduced in at least eight states; bills to require restaurant chains to provide nutritional information were introduced in at least five states; bills to develop diabetes-screening programs for children were passed in two states; bills to impose or broaden sales taxes on soft drinks or syrups were introduced in at least nine states; bills to adjust taxes on food items were introduced in at least seven states; bills to examine or adjust the nutritional content of school meals were introduced in at least 14 states; and bills to ban or limit junk food in vending machines or school cafeterias were introduced at least 15 states (Uhlman, 2003). Canadian legislators have also been considering obesity-related bills, such as the

February 2004 proposal by a Winnipeg New Democrat MP that would effectively remove trans-fats from processed foods sold in Canada (Picard, 2004). Similar legislation has already been enacted in Denmark (Food Ingredient News, 2003).

Tax policy is also being used to discourage obesity. One avenue is the so-called “fat tax” approach, which seeks to discourage consumption of unhealthy foods by increasing the effective price to consumers. For example, in April 2004, the Ontario government proposed to begin charging provincial sales tax for restaurant meals under \$4.00 (Mackie, 2004). The move was motivated in large part by a desire to increase the effective rate of taxation on fast food meals. As of this writing, it appears that, in the face of public and industry opposition, some of which is surely due to the broad array of food items which could be affected, Ontario is prepared to back down on the proposal.

Other jurisdictions are contemplating more specific, if no less ambitious, approaches. For example, a bill introduced into the California Senate in 2002 sought to tax soft drinks and redistribute the revenues raised. The Senate proposed to spend half of the money earned on public health-awareness programs, and to give the other half to school districts that agreed to stop selling soft drinks on campus. This could serve to offset monies currently given to schools through existing arrangements with beverage marketers (ConsumerFreedom.com, 2002; Reuters, 2002). Another bill introduced in New York in June 2003, by Democratic Assemblyman Felix Ortiz, seeks to place a ¼ of one percent additional sales tax on all currently taxed food and drink, video games and video game equipment, and movie rentals, and to institute new taxes on previously untaxed items defined as “sweets or snacks” (New York State Assembly, 2003; McGraw, 2003). This bill has been nicknamed the “couch potato tax,” because of its focus on both snack foods and less active forms of entertainment.

In contrast to the “fat tax” approach, tax policy can also be used to encourage healthy behaviour. Australia has long allowed consumers to take tax deductions for membership fees in weight-loss programs. In 2002, the United States Internal Revenue Service designated obesity as a disease and started allowing similar deductions. The U.S. write-offs also extend to treatments such as stomach stapling surgery, certain weight-loss drugs, and nutritional counseling (KOMO, 2004). State taxation authorities may also adopt this approach. New York State is now considering a \$500 per household tax credit for health club memberships, home exercise equipment, participation in Little League, and other fitness-related expenses (International Health, Racquet & Sportsclub Association, 2004). This bill was introduced by a Republican senator as a direct response to the “couch potato tax” legislation described above. At least in theory, similar programs could be established to subsidize the consumption of healthier foods.

D. Policies Designed to Influence Smoking Behaviour

The Heart and Stroke Foundation of Canada issued a release on February 10, 2004 stating, “Fat is the new tobacco.” Given the magnitude of the obesity problem, it is clear that the “battle of the bulge” can be informed by what has been learned in the tobacco arena. Since the 1960s, when research first linked smoking to cancer, governments have tried to reduce cigarette consumption and the prevalence of smoking (Garrison, 1987). Over the past forty years, most developed countries have endeavoured to influence smoking behaviour through policy. Societal health concerns and their impacts on health care programs have motivated governments to intervene.

Figure 9: Fat is the New Tobacco (Cartoon Copyright by Michael Ramirez)



The following is a brief discussion of the effectiveness of these policies. Each section also includes a discussion about the impacts on youth because research indicates that very few persons begin smoking once they are over the age of twenty-two (DeCicca *et al.*, 2002). Thus, the most effective way to reduce the impacts of smoking is to influence youth smoking behaviour. The following table provides a summary of the efforts that have been undertaken in order to decrease smoking prevalence and consumption.

Table 10: Regulatory Instruments to Decrease Smoking Prevalence and Consumption

Marketing Restrictions	Usage Restrictions	Other Policies
Banning advertising in all or specific media including TV, radio, billboards, sporting events, etc.	Banning usage in public places, including workplaces, restaurants, bars, etc.	Excise taxation
Mandating the inclusion of warning labels on advertising and/or packaging	Restricting smoking to certain areas in public places with/without added ventilation	Health reports linking smoking to disease (i.e., The Surgeon General's Report)
Requiring that anti-smoking advertisements are run in proportion to broadcast advertisements	Imposing age restrictions on the purchase of tobacco products	Publicly funded anti-smoking advertising campaigns
Restricting advertising in media where youth exposure is likely (i.e., billboards and magazines with high levels of youth readership)		Providing health coverage for nicotine replacement therapies
Limiting sports sponsorship to the corporate names, rather than particular brands		Publicly funded programs to assist persons to quit
Banning the use of promotional products such as t-shirts, baseball caps, etc. that promote cigarette brands		Banning vending machines for the sale of tobacco products
		Telephone help lines
		Observing the WHO World No-Tobacco Day

Marketing Regulations

Advertising

Restricting manufacturers' marketing of cigarettes is a smoking-reduction approach used in many countries. In the U.S., from 1968 through 1970, the Fairness Doctrine Act regulated tobacco advertising (Farr *et al.*, 2001). This policy required that anti-smoking advertisements be aired in proportion to the number of smoking advertisements that were broadcast on television and radio, and broadcasters were required to subsidize these advertisements (Calfee and Ringold, 1990). Shortly after this regulation was introduced, other countries began banning broadcast advertising for cigarettes. Nelson (2003) indicates that nine countries, including Canada, enforced comprehensive bans (that encompassed several promotional media) on cigarette advertising.

Since 1970, numerous studies have evaluated the effectiveness of these bans. Most studies have concluded that advertising bans are not good economic policy and have not brought about any significant dampening of demand. Governments justify these bans by stating that tobacco advertising causes individuals to take up smoking. However, research indicates that advertising has a small effect on the demand for cigarettes. This is the main reason put forth against the use of advertising bans. In a 1996 (Duffy, 1996) meta-analysis and in a 1999 study by Depken, both researchers concluded that advertising has had little or no effect upon cigarette use in recent decades, and that broadcast advertising bans in several countries are ineffective. Johnson (1988) came up with similar findings for

Australia. Nelson (2003) states that those studies that show negative impacts from advertising bans do so because they have instituted these bans after smoking behaviour has begun to decline. Farr *et al.* (2001) argue that the removal of advertising bans would cause an increase in social welfare.

Conclusions about the effects of advertising generally support the industry position that, given the oligopolistic structure of the cigarette industry and the lack of price competition, advertising solely serves to shift smokers between brands (Cox, 1984; Doron, 1979). Studies examined by Duffy (1996) and a paper by Waterson (1981) support this conclusion.

Duffy compared the U.S. broadcast ban of 1970 to the Fairness Doctrine Act, and showed that the latter was likely more effective because it utilized anti-smoking messages. Doron (1979) notes that cigarette consumption in the U.K., Italy, France, and Switzerland increased after television bans were imposed. This increase may have resulted from reduced awareness of health risks from cigarette smoking, or it may have occurred because tobacco companies were incurring lower marketing costs and were passing the savings on to consumers (Nelson 2003). Individual manufacturers still have incentives to advertise to encourage brand-switching (Calfee and Ringold, 1990). Therefore, replacing the Fairness Doctrine Act with the ban appears to have benefited the tobacco industry rather than the public by increasing both market power and industry profits (Farr *et al.*, 2001; Doron, 1979).

Critics of the ban argue that bans limit the industry's ability to promote "better" products. Calfee and Ringold (1990) state that advertising pushes manufacturers to develop cigarette types that are lower in tar and nicotine.

Labelling

Some researchers have studied the effectiveness of cigarette warning labels, and have found that these appear to alter smokers' behaviour by reducing consumption or motivating them to quit. Some of the most powerful warning labels are those found on Canadian cigarette packages. The labels contain strong messages and graphics that are large in size. Hammond *et al.* (2003) indicate that these factors increase the likelihood that smokers will notice the labels. Their study found that survey respondents demonstrated a strong knowledge about the content of labels, and that those smokers who read, thought about, and discussed the warning labels were more likely to have quit, made a quit attempt, or to have reduced their smoking. The authors add that the messages on the labels did not appear to wear out after 9 – 12 months. This can be attributed to the fact that there are a number of different warnings, and each provides a significant amount of information about the dangers of smoking and the benefits of quitting.

A 1998 study by Beltramini investigated the effects of cigarette advertising and warning labels in the U.S. Messages included, “Caution: Cigarette Smoking May Be Hazardous to Your Health” and “Warning: The Surgeon General Has Determined That Smoking Is Dangerous to Your Health.” These types of warnings appeared to do little to influence smoking behaviour, except to cause smoker to shift to brands lower in tar (Beltramini, 1988). Beltramini adds that graphics, contrasting colour, large type, a standardized position on the package, summarized formats, and qualitatively oriented information all add to the effectiveness of warning labels. Additionally, too much or complex information was likely to be ignored.

Impacts on Youth

Supporters of advertising bans argue that TV and radio advertising influences youths to smoke (Calfee and Ringold, 1990). A study by Ho (1994) somewhat addresses this concern. Ho surveyed students in grades 10, 11, and 12, and concluded that image creation and image-enhancement advertising do not influence youths’ perceptions about smoking. The researcher found that youths’ motives for smoking (such as addiction for males and social distinction for females) influenced their perceptions that smoking is stylish, a sign of independence, and a mark of social distinction and professional success. These findings, however, do not specifically indicate whether advertising motivates youths to start smoking.

Usage Restrictions

Smoking Bans in Workplaces and in Public Places

Bans on smoking in workplaces and public places are commonplace, and workplaces that have implemented bans often offer smoking cessation programs (Lanoie and Leclair, 1998). Bans have been implemented through legislation as well as by private businesses. Restrictions vary by city and province/state, and the most restrictive policies are generally found in those areas that have stronger anti-tobacco attitudes. It is therefore difficult to determine how much of the reduction in smoking can be attributed to bans and how much to attitudinal changes (Levy and Friend, 2003; Ohsfeldt *et al.*, 1998). Research in this area promotes the implementation of workplace bans as a means of reducing cigarette consumption and smoking prevalence. In addition to directly influencing smoking behaviour, these policies may have the added effect of communicating that smoking is socially unacceptable (Levy and Friend, 2003; Biener and Nyman, 1999). Most research in this arena is in the form of

longitudinal studies, and surveys have generally been conducted after a ban has been announced but has not yet gone into effect and at different time periods after the ban has been implemented.

The quantitative data from these studies indicate that workplace and public bans reduce smoking prevalence by 10% or more. The findings are similar for cigarette consumption. Reductions in consumption generally occur immediately, whereas reductions in smoking prevalence materialize over longer periods of time (Stave and Jackson, 1991; Levy and Friend, 2003; Farrelly *et al.*, 1999). The results for reductions in prevalence are less consistent than those for consumption. Borland *et al.* (1990) and Farrelly *et al.* (1999) both indicate that heavy smokers made the largest reductions in consumption.

Results also indicate that only complete bans affect smoking behaviour, and that more comprehensive smoking restrictions generally result in greater impacts (Czart *et al.*, 2001; Farrelly *et al.*, 1999). The enforcement of smoking policies is also critical to their success. Biener and Nyman (1999) argue that poor enforcement may contribute to a workplace's inability to demonstrate impacts from a worksite smoking ban. On the other hand, Czart *et al.* (2001) conclude that individual restrictions do not influence behaviour; however, the cumulative impact of restrictive smoking policies results in reductions in smoking. Reinhardt and Giles (2001) state that such policies have no regard for the large consumer surplus enjoyed by smokers and that large tax increases should replace smoking bans.

The Impacts of Smoking Bans on Youths

A study by Wakefield *et al.* (2000) focused on ways in which restrictions at school and in public places impact teenage smoking. Wakefield's results generally correspond to the findings above, which indicate that more extensive restriction reduces youth uptake of smoking, and that it is necessary to enforce school bans in order to influence smoking behaviour. The researcher adds that the existence of strong smoking bans enforced at home has a greater impact than do restrictions at schools and in public places; this is true even if parents are smokers. Farrelly *et al.* (1999) and Fichtenberg and Glantz (2002) found that workplace restrictions reduce smoking behaviour in younger age groups. Farrelly *et al.* (1999) found that persons aged 18 – 24 exhibited the smallest declines in smoking behaviour.

Age restrictions on the purchase of cigarettes also directly impact youth smoking behaviour. Chaloupka and Wechsler (1997) states that high compliance by retailers is necessary for these policies to have any impact. Aggressive enforcement and strong penalties are necessary for achieving high compliance rates.

Other Policies

Excise Taxation

Many researchers have explored the ways in which using taxes to change cigarette prices impacts demand. Certainly, cigarette demand adheres to the fundamental law of economics: If prices rise, demand will fall. Taxes provide smokers with an economic disincentive to smoke (Hu, 1994). However, some question whether excise taxation is socially regressive and whether it has larger impacts on those who can least afford it. Researchers are also interested in how gender, age, race, and religion affect responses to changes in taxation levels.

According to Townsend (1993), price elasticities for cigarette demand cluster at around -0.55. Some individuals therefore believe that a 1% increase in price will result in a 0.55% reduction in consumption through a reduction in cigarettes smoked or through smoking cessation. Based on the results of several other studies in his calculations, Brown (1995) also uses a price elasticity of demand of -0.5. A study by Farrelly *et al.* (2001) includes a number of comparisons for different sociodemographic characteristics. The results indicate that women are more price-responsive and more likely to quit in response to price increases than are men; those with income below the median are four times more responsive than those above it; and African-Americans and Hispanics are more price-responsive than Caucasians. Farrelly *et al.* also conclude that although excise taxes are regressive, lower income individuals' higher responsiveness to price does shift some of the burden to higher income groups. Furthermore, Gruber and Kosegi (2002) state that the regressiveness of excise taxation is most likely reversed using a rational addiction model. Townsend (1993) also indicates higher elasticities for low-income groups.

Some have proposed that government should consider bootlegging when it determines levels of excise taxation (Showalter, 1998). When taxation levels become too high, consumers often cross state/provincial/country borders in order to purchase cheaper cigarettes; this may therefore lead to the development of an underground bootlegging industry (Showalter, 1998, Leu, 1991). Excise taxes in Canada were reduced in 1994 in direct response to smuggling, and both the federal government and certain provincial governments reduced tax levels (Hamilton and Levinton, 1997). Hamilton and Levinton examined the effects of these tax reductions and concluded that those provinces that cut taxes slowed the decline in smoking, as compared to those provinces that did not cut their taxation levels.

Anti-Smoking Campaigns

Three studies specifically examined the effectiveness of anti-smoking campaigns conducted in California, Massachusetts, and Australia. California began its campaign in 1989 (Hu, 1994); the Massachusetts campaign commenced in 1993 (Biener *et al.*, 2000); and Australia's campaign commenced in Sydney and Melbourne in 1983 and 1984, respectively (Pierce *et al.*, 1990). Both American programs were funded by twenty-five cent increases in state-level cigarette excise taxes.

The California program was a statewide multimedia advertising campaign that cost approximately \$26 million over between 1989 and 1993. Hu (1994) concluded that this anti-smoking campaign significantly reduced cigarette sales. Estimates about the campaign's effectiveness were calculated separately from the effects of the increase in taxation. The media campaign was responsible for reducing per capita sales by 7.7 packs, as compared to 27.3 packs per capita through taxation (Hu, 1994). However, these results cannot be interpreted as an indication that taxation is more effective than anti-smoking advertising campaigns (Hu, 1994). Estimates regarding changes in cigarette consumption, as opposed to changes in smoking prevalence were not calculated; however, Popham *et al.* (1993) surveyed Californians who quit smoking, in an attempt to identify whether the anti-smoking campaign influenced their decisions to quit. They found that a meaningful proportion of quitters attributed their decisions to the anti-smoking campaign (Popham *et al.*, 1993).

Biener *et al.* (2000) analyzed the Massachusetts campaign, which utilized a mass media promotion, along with treatment for smokers, youth leadership programs, telephone counselling, and educational materials. Results show that smoking declined more rapidly in the state of Massachusetts than in states without anti-smoking campaigns; however, the impact of the anti-smoking program was not estimated separately from the tax increase (Biener *et al.*, 2000). Biener adds that the campaign produced larger declines in its earlier years, and that these reductions in smoking behaviour saved the state an estimated \$85 million per year in health care costs.

Australia's program included a mass media campaign, a telephone quit line, school programs, and the involvement of physicians, who encouraged their patients to quit. Pierce *et al.* (1990) found that the campaign resulted in an immediate 2.5 percentage point decline in smoking prevalence. The results for adult males were more consistent than for females. Continuation of the campaign resulted in sustained decreases in smoking prevalence, albeit at a lesser rate.

General articles also indicate that media campaigns have been effective anti-smoking policies. Flay's (1987) evaluation of 40 anti-smoking campaigns shows that more intensive/aggressive campaigns provide the best results (Flay, 1987; Goldman and Glantz, 1998). Intensive campaigns are

those that have high advertising frequencies, extended reach and long durations (Flay, 1987; Erickson *et al.*, 1990). Aggressive campaigns are explicit in nature and portray the tobacco industry as manipulative and solely interested in making profits (Goldman and Glantz, 1998). Anti-smoking campaigns are most effective when they include ancillary programs such as telephone quit lines, school programs, and other community programs (Flay, 1987).

Health Scares

Researchers first attempted to reduce smoking by releasing documents that linked smoking to health problems. The most recognized of these reports were those published by the Royal College of Physicians in the U.K. in 1962 and 1971 and the U.S. Surgeon-General's Office in 1964. Since that point, both authorities have released other reports, although these have not been analyzed with as great interest, nor have they garnered the amount of media attention of the initial reports.

Witt and Pass (1981) analyzed the effects of these health scares on the demand for tobacco products. Although the researchers found that advertising leads to a small, but statistically significant, increase in demand, they also concluded that anti-smoking publicity in the form of health scares does reduce demand. However, health scares are only effective in the year the document is released and during the year that follows (Witt and Pass, 1981). Warner (1977) analyzed similar health scares and concluded that the release of the 1964 Surgeon-General's report caused a significant decrease in demand; however, tax increases that took effect in 1965 make it difficult to assess its long-term effectiveness.

Another study by Leu (1991) analyzed the effects of the 1964 Surgeon-General's Report on the demand for cigarettes in Switzerland. The author concludes that the health scare resulted in a permanent decrease in the demand for cigarettes in that country. This contradicts Witt and Pass' findings. Leu (1991) also cites a paper by Atkinson and Skegg (1973), which found that health scares' effectiveness has completely faded away over time. However, regardless of whether the effects are permanent, health scares have, indeed, influenced the demand for cigarettes.

Impact on Youths

Higher price elasticities are generally reported for teenagers (Townsend, 1993). These higher taxes reduce youth smoking by preventing young people from launching cigarette habits (DeCicca *et al.*, 2002). Some reasons why teenagers' responses are greater than those of adults include the fact that their disposable income is low (Coppejans and Holger, 2002) and that they have lower "smoking

capital” accumulated (Coppejans and Holger, 2002). Chaloupka and Wechsler (1997) also note that price increases may also impact how available cigarettes are to teens, because retailers may take measures to prevent shoplifting, peers may be less willing to share, and parents may be more aware of their children’s supply of cigarettes.

Siegel and Biener (2000) conducted a separate study of the Massachusetts anti-smoking campaign, which indicated that children aged 12 and 13 who had high levels of exposure to the advertisements in 1993 – 94 were half as likely to be established smokers four years later, as opposed to those children who did not report early exposure to the advertisements. Hu (1994) mentioned that the California campaign specifically targeted children; however, the impacts of this focus were not estimated.

Table 11: A Review of Studies about Policies and Factors that Impact Smoking

Author(s)	Year	Country	Topic	Objective	Method	Results	Comments
Nelson	2003	OECD	Advertising	To examine the effectiveness of advertising bans	Regression Analysis	Advertising bans do not reduce aggregate consumption	Previous studies that indicate that advertising bans are effective do not account for structural change in cigarette demand functions, endogeneity of advertising bans, and non-stationarity of cigarette consumption data
Farr, Tremblay, and Tremblay	2001	U.S.	Advertising	A determination of the impact of advertising restrictions on social welfare	Welfare Analysis	For the majority of the cases examined by the authors, society would be better served if all advertising restrictions were eliminated	Higher taxes and stiffer clean indoor air regulations appear to be superior to advertising restrictions if the policy goal is to reduce cigarette smoking in the U.S.
Depken	1999	OECD	Advertising	An analysis of the impact of advertising restrictions on cigarette prices in OECD countries	Regression Analysis	Complete advertising bans have no effect on the price of cigarettes and advertising restrictions have a negative effect on prices	Author suggests that advertising only shifts smokers from one brand to another and advertising restrictions may lower costs to firms, thus allowing the real price of cigarettes to fall
Lamdin	1999	U.S.	Advertising	To determine if the 1971 broadcast ban had a positive impact on tobacco firms' stock returns and if it reduced the riskiness of the stock	Event Study	The ban did not increase the value of tobacco corporations nor did it reduce the riskiness of their stock	An earlier study used an incorrectly placed event window that came to the opposite conclusion, which was re-examined here
Duffy	1996	OECD	Advertising	To study the effects of advertising and advertising bans on cigarette consumption	Meta-analysis	Advertising has little or no effect on consumption, and advertising bans are ineffective instruments of policy	Some studies show that advertising bans increase consumption
Johnson	1988	Australia	Advertising	To study the impact of advertising and advertising bans on aggregate demand for cigarettes	Regression Analysis	Results show no statistical evidence that links aggregate cigarette advertising to demand, nor do they show evidence that a media ban has an effect on demand	The author mentions similar findings for the U.S. and the U.K.
Yucelt and Kaynak	1984	U.S.	Advertising	An investigation of the effects of advertising on cigarette sales	Regression Analysis	Newspaper and television advertising had positive, but insignificant effects, on cigarette consumption	Total deaths due to cancer in the respiratory system, product loyalty, and average prices were significant in the model
Waterson	1981	OECD	Advertising	A study of the impact of advertising on demand	Comparison of Results	Advertising does not increase demand for cigarettes and advertising bans are ineffective	The author also notes evidence that suggests that advertising does not influence young people to take up smoking

Author(s)	Year	Country	Topic	Objective	Method	Results	Comments
Doron	1979	U.S.	Advertising	An examination of the effects of the broadcast ban and the Fairness Doctrine Act	Discussion	Consumption decreased under the Fairness Doctrine Act and increased when the broadcast advertising ban was implemented	The author notes similar increases in consumption under advertising bans in other developed countries
Gallet and List	2003	Multiple	Advertising	An examination sensitivity of previous results, to provide better basis for policy recommendations	Regression Analysis, Meta-Analysis	Empirical results suggest that demand specification, data issues, and estimation methodology have varying degrees of influence on reported estimates of price, income, and advertising elasticities	* Empirical results are sensitive to time period and quality of journal in which results were published * Elasticities are generally less elastic in the short run and in more recent studies
Saffer and Chaloupka	1999	International	Advertising	An examination of the previous literature on the impact of advertising tobacco products	Meta-analysis	* The primary conclusion of this research is that a comprehensive set of tobacco advertising bans can reduce tobacco consumption and that a limited set of tobacco advertising bans will have little or no effect * When most of the remaining media are restricted, the options for media substitution are also eliminated	Only a comprehensive set of media bans can reduce the level of cigarette advertising and result in reduced tobacco use
Hoek	1999		Brand Advertising	To investigate whether advertising restrictions affect young smoker behaviour	Survey	* The idea that advertising can influence a consumer toward new behaviours is called the 'strong' theory of advertising * Such theory is not supported by research on tobacco consumption, given the evidence that young people's knowledge of tobacco ads and their behaviours relating to smoking have no real correlation	
Hammond, Fong, McDonald, <i>et al.</i>	2003	Canada	Labelling	To assess the impact of the graphic Canadian cigarette warning labels on current adult smokers	Survey	Smokers who read, discussed and thought about the warnings were more likely to have quit, made an attempt to quit, or have reduced consumption	The findings also indicate very little wear out in the salience of the warning labels between 9 – 12 months after their introduction

Author(s)	Year	Country	Topic	Objective	Method	Results	Comments
Beltramini	1988	U.S.	Labelling	To study the perceived believability of warning label information among young adults	Survey	The firmness with which young adults' initial attitudes are held serves as an influence on a believable response from the presentation of warning label information	The author found that there is the potential for additional attention value to the label through the use of pictures, illustrations, and/or graphics
Brown, Snell, and Tiller	1999	U.S.	Production	Examines the effects of cigarette price increases with and without the tobacco program	Demand Analysis	A phase-out of the tobacco program with quota owners receiving compensation for their quota has the potential to find the support of most growers and quota owners	* Ending the tobacco program would also likely result in an increase in the tobacco grown in the U.S. * Burley and flue-cured growers and quota owners would be affected differently
Brown	1995	U.S.	Production	To simulate the effects of recently proposed increases in smoking restrictions and excise taxes on prices, quantities, quota lease rates, and revenues in tobacco-producing areas	Equilibrium Model	Reducing price minimizes the loss in farm-level tobacco revenues	A reduction in price reduces the return to tobacco quotas and the majority of tobacco quota owners rent out their quota
Murphy, Shelley, Repetto, <i>et al.</i>	2003	U.S.	Social Marketing	To examine the awareness and use of stop smoking medications and changes in smoking/purchasing behaviour among Medicaid clients	Survey	* There is a lack of awareness regarding the Medicaid coverage benefit for smoking cessation pharmacotherapies * There is a higher level of price sensitivity among low-income smokers	The authors indicate that a portion of cigarette tax revenues collected should be allocated to assist low-income smokers to quit
Zweifel	2001	N/A	Social Marketing	A study of behavioural change induced by improved information about smoking risks	Microeconomic Model	* Persons' perceived risks of smoking are much higher than what is believed to be the risk from professional sources * Improving risk information would lead to increased consumption	The author advocates marketing the smokeless cigarette to make smoking less of a problem
Biener, Harris, and Hamilton	2000	U.S.	Social Marketing	To assess the impact of the Massachusetts tobacco control program	Regression Analysis	* The program produced a significant decline in the prevalence of adult smoking during its early year * In later years, the decline has continued at a slower rate	The campaign included anti-smoking advertising, treatment, youth programs, telephone counselling, and educational materials

Author(s)	Year	Country	Topic	Objective	Method	Results	Comments
Siegel and Biener	2000	U.S.	Social Marketing	To examine the impact of the Massachusetts anti-smoking campaign on adolescents	Regression Analysis	Youths aged 12 to 13 were less likely to have progressed to established smoking behaviour if they were exposed to anti-smoking television advertising	Older youths, 14 to 15, did not exhibit the same behaviour
Goldman and Glantz	1998	U.S.	Social Marketing	A review of research on the effectiveness of various anti-smoking campaigns	Comparison of Results	Using industry manipulation and second hand smoke messages produces more effective advertisements	Aggressive, in-your-face campaigns generate better results
Hamilton and Levinton	1997	Canada	Social Marketing	To examine the impact of tobacco tax cuts made in 1994 in response to cigarette smuggling in Canada	Survey	Although smoking prevalence still declined, the tax rollbacks slowed the reduction in smoking prevalence in Canada	The authors state that benefits of reduced smuggling need to be weighed against the health consequences
Popham, Potter, Bal, et al.	1993	U.S.	Social Marketing	Investigates whether the California media campaign motivated smokers to quit	Survey	The mass media campaign at least partially influenced a meaningful proportion of adults to quit smoking	Respondents were asked uncued and cued questions about their motivations to quit smoking
Pierce, Macaskill, and Hill	1990	Australia	Social Marketing	Evaluates the effectiveness of anti-smoking campaigns in Australia	Regression Analysis	The campaigns produced significant decreases in smoking prevalence	The magnitude of the decreases in smoking prevalence was greatest in the year of implementation
Erickson, McKenna, and Romano	1990	U.S.	Social Marketing	Analyzes the effectiveness of mass media campaigns over time	Comparison of Results	Mass media campaigns have produced mixed results through time, but can produce substantive changes in behaviour	Using revenues from excise tax, revenues can be used to purchase appropriate advertising time
Flay	1987	OECD	Social Marketing	An evaluation of 40 mass media anti-smoking campaigns	Comparison of Results	Mass media campaigns are appropriate for improving awareness, knowledge, and motivation to quit smoking	More intensive campaigns produce better results
Gallet and Agarwal	1999	U.S.	Social Marketing, Health Information		Regression	* The results show that cigarette demand gradually decreased over a ten-year period, coinciding with the release of key health information * Price and advertising elasticities have gradually diminished, which is consistent with a change in the mix of U.S. consumers before and after the switch	

Author(s)	Year	Country	Topic	Objective	Method	Results	Comments
Hu and Mao	2002	China	Taxation	To analyze the dilemma of public health versus the tobacco economy through additional taxes	Regression Analysis	The monetary benefit of increasing taxes far exceeds losses to the cigarette industry and tobacco farmers	Including the number of lives saved and savings in medical costs makes increasing cigarette taxes an even more attractive policy
Yorozu and Zhou	2002	Japan	Taxation	To analyze the effectiveness of increased prices and anti-smoking programs in reducing cigarette consumption in Japan	Regression Analysis	Both taxation and anti-smoking campaigns would be effective in reducing cigarette consumption in Japan	* Very few studies have been conducted in Japan, a country that has very high consumption per capita of cigarettes and an absence of smoking regulations: The Japanese tobacco industry is state-run
Coppejans and Holger	2002	U.S.	Taxation	To study consumption of addictive substances under price uncertainty	Utility Maximization	* The behaviour of forward-looking individuals can be quite sensitive to beliefs that individuals hold about future prices * Tax policies that alter individuals' beliefs about future prices are most effective in reducing teenage cigarette consumption	Most previous research implicitly assumes that individuals have perfect foresight
Gruber and Koszegi	2002	U.S.	Taxation	To determine the optimal level of taxation using a rational addiction model	Utility Maximization	The optimal tax on cigarettes, above and beyond externalities, is likely much higher than originally thought	The model also shows that the traditional conclusion that cigarette taxes are regressive is reduced and most likely even reversed
DeCicca, Kenkel, and Mathios	2002	U.S.	Taxation	Studies the impact of taxes during the period of adolescence when most smokers start their habits	Regression Analysis	Results suggest that cigarette taxes and smoking onset are not strongly related	It is suggested that peer influences and anti-smoking campaigns may have a greater impact than taxes
Reinhardt and Giles	2001	Canada	Taxation	The use of tax increases as an alternative policy to cigarette bans	Regression Analysis	A steep tax increase would restrict cigarette consumption to those who value it most	Previous studies ignore the fact that smokers enjoy a large consumer surplus from smoking cigarettes
Farrelly, Bray, Pechacek, <i>et al.</i>	2001	U.S.	Taxation	To analyze how different sociodemographic groups respond to cigarette price increases	Regression Analysis	Any increase in the price of cigarettes will have differential effects on smokers of different ages, genders, incomes, races, or ethnicities	A number of results for different sociodemographic groups are presented: Of note is that the authors suggest that lower income groups are much more responsive to price increases, which mitigates some of the socially regressive effects of excise taxation

Author(s)	Year	Country	Topic	Objective	Method	Results	Comments
Showalter	1998	U.S.	Taxation	To determine if Federal excise taxes are more effective than state taxes	Regression Analysis	Federal taxes do not appear to be more effective than state taxes.	The author mentioned that a previous study that concluded that federal taxes were more effective than state taxes was likely incorrect since cigarette prices began rising sharply before the increase in federal taxes, which caused a decrease in demand
Levy and Friend	2003	U.S.	Usage Restrictions	To compare studies regarding the restriction of smoking in public places	Comparison of Results	Smoking restrictions, whether imposed by public laws or private firms, reduce the quantity smoked and smoking prevalence	Two Canadian studies mentioned in the article had similar findings: One mentioned that strict clean air laws are nearly as effective as large price differences in reducing smoking rates
Fichtenberg and Glantz	2002	OECD	Usage Restrictions	To quantify the effects of smoke-free workplaces on employees	Comparison of Results	Totally smoke-free workplaces had nearly twice the effect on consumption and prevalence as policies that allowed smoking in some areas	These policies will have an impact on teenagers that work in non-smoking environments as well
Wakefield, Chaloupka, Kaufman, <i>et al.</i>	2000	U.S.	Usage Restrictions	To determine the relationship between the extent of restrictions on smoking at home, at school, and in public places and smoking uptake and smoking prevalence among school students	Regression Analysis	Restrictions in the home and public places and enforced bans in schools reduce smoking uptake among teenagers	Home smoking restrictions had a much greater effect than bans in public places on uptake of smoking
Biener and Nyman	1999	U.S.	Usage Restrictions	A longitudinal study of workplace smoking policies	Survey	Continuous employment at a workplace with a ban strongly predicts smoking cessation	Failure to demonstrate an impact of such policies may be due to poor enforcement
Farrelly, Evans, and Sfekas	1999	U.S.	Usage Restrictions	To estimate the impact of workplace smoking restrictions that impact the prevalence and intensity of smoking	Survey	The more restrictive the policy, the greater the decline in smoking: The longer persons were subjected to restrictive smoking policies, the less likely they were to smoke	By simulating the effect of applying workplace smoking bans to all workplaces, there would be an estimated 10% drop in the current level of smoking
Wakefield, Wilson, Owen <i>et al.</i>	1992	Australia	Usage Restrictions	To investigate the effects of workplace smoking restrictions on cigarette consumption	Survey	Workday consumption is decreased through workplace restrictions: The reduction occurs regardless of whether bans are total or only apply to the usual workstation	Similar patterns of reduction occur in both blue-collar and white-collar workers

Author(s)	Year	Country	Topic	Objective	Method	Results	Comments
Stave and Jackson	1991	U.S.	Usage Restrictions	To examine the effects of a total work-site ban on employee smoking	Survey	Smoking prevalence decreases were significant only after the ban was in place for 9 months: Cigarette consumption dropped nearly 50%	Attitudes towards smoking bans are viewed favourably by most employees; however, smokers generally do not support such policies
Borland, Chapman, Owen, <i>et al.</i>	1990	Australia	Usage Restrictions	To study the effects of workplace smoking bans on cigarette consumption	Survey	Smoking prevalence in the sample changed very little, although the ban was associated with reduced rates of cigarette consumption	It appears that heavy smokers benefit most from a workplace ban
Czart, Pacula, Chaloupka, <i>et al.</i>	2001	U.S.	Multiple Categories	To examine the impact of cigarette prices, clean indoor air laws, and campus-level smoking policies on the smoking behaviour of college students	Regression Analysis	* Higher prices discourage both smoking participation and the level of smoking * Individual smoking restrictions do not significantly influence smoking behaviour; however, there is a cumulative effect of such restrictions	The paper also includes some results based on gender, ethnicity, and religion
Gallet and Agarwal	1999	U.S.	Multiple Categories	To estimate changes in the U.S. demand for cigarettes over time	Regression Analysis	The price and advertising elasticities have decreased over time, possibly because consumers with high-risk discounting, higher levels of education and investments in health, and lower levels of addiction have left the market	The author proposes that the gradual switching model used is superior to the use of dummy variables in capturing the effects of a health scare
Ohsfeldt, Boyle, and Capilouto	1998	U.S.	Multiple Categories	An estimation of the effects of tobacco excise taxes and laws restricting public smoking on the likelihood of current use of different forms of tobacco	Regression Analysis	* Individuals in areas with higher tax rates tend to be less likely to smoke cigarettes * Restricting smoking in public places appears to discourage cigarette use	The paper also examines how cigarette tax rates encouraged switching to the use of chewing tobacco
Lanoie and Leclair	1998	Canada	Multiple Categories	An investigation of the relative abilities of taxes and regulation to reduce cigarette consumption	Regression Analysis	Cigarette taxes have an impact on the quantity of cigarettes smoked, but not on the decision to smoke or not, while regulation has the opposite effect	Cigarette demand appears to be less sensitive to price changes when one accounts for smuggling

Author(s)	Year	Country	Topic	Objective	Method	Results	Comments
Ho	1994	Australia	Multiple Categories	To investigate adolescent smokers' perceptions of cigarette advertising and cigarette health warnings	Regression Analysis	* The findings do not support the fact that cigarette advertisements influence smoking behaviour via image creation and image-enhancement * The deterrent effectiveness of warning labels is dependent on an individual's motive for smoking	The author also made gender comparisons
Hu, Sung, and Keeler	1994	U.S.	Multiple Categories	To assess the relative effects of taxation versus the anti-smoking media campaign on cigarette sales	Regression Analysis	Both the increase in excise taxes and the anti-smoking media campaign were statistically significant in reducing cigarette sales	Though the increase in taxes had a larger effect than the anti-smoking campaign, the authors do not conclude that taxation policies are more effective
Leu	1991	OECD	Multiple Categories	To examine the effectiveness of taxation and anti-smoking publicity	Regression Analysis	Publicity surrounding events such as the U.S. Surgeon General's Report and tax increases cause significant decreases in demand	The cumulative effect of continued anti-smoking efforts is more dramatic than the effect of single prominent anti-smoking events
Witt and Pass	1981	U.K.	Multiple Categories	To determine the effects of health scares and manufacturers' advertising on the demand for cigarettes	Regression Analysis	Health scares, such as the First Report by the Royal College of Physicians, reduce cigarette consumption in the year that they are released and in the subsequent year	The authors also conclude that advertising has a small, but significant, positive effect on cigarette consumption
Warner	1977	U.S.	Multiple Categories	To determine the effects of anti-smoking publicity on cigarette consumption	Regression Analysis	Health scares and anti-smoking campaigns produce decreases in cigarette consumption	Promotes the use of sustained campaigns to influence smoking behaviour
Atkinson and Skegg	1973	U.S.	Multiple Categories	An examination of the effects of taxation and anti-smoking publicity on demand	Regression Analysis	Anti-smoking publicity caused a sudden, but non-permanent fall in consumption	Publicity appeared more effective on men, while women seemed to respond only to taxation

A summary of the previous literature appears to provide empirical support for the following findings:

- **Advertising bans** – These are not very successful in reducing smoking. Due to the industry’s oligopolistic nature, advertising may only shift sales among brands rather than increasing total cigarette sales. Additionally, advertising bans may increase cigarette manufacturers’ market power.
- **Warning labels** – These do appear to reduce smoking; however, it is important to have consistent messages over time, in order to maintain sustained reductions.
- **Usage restrictions** – These may affect tobacco consumption, although enforcement is very important (but costly) in reducing consumption.
- **Taxes** – These provide an economic disincentive to smoking. However, demographic outcomes differ (high- versus low-income and women versus men), and very high taxes encourage smuggling.
- **Social marketing strategies** – These include publishing health scares, and have been effective in reducing smoking. It is important to incorporate messages into schools.

Implications for Food and Health Policies

The correlations between the above tobacco policy summary and diet/food policies are not always direct (some of these comparisons are highlighted in Table 12 below). This is due to the fact that there are differences in the natures of the social problems. For example, the fact that there are no positive or neutral health affects associated with tobacco consumption is very different than a similar consideration for fat, salt, sugar, or any of the other food-related problems. Additionally, as long as individuals engage in certain food behaviours in moderation, at certain stages of growth there are benefits associated with consumption of most food “problems.”

Thus, policies such as taxation, which may impact regressively on lower income members of society, have even greater problems. Tobacco consumption reductions can directly benefit health, while food consumption changes that are not associated with activity changes may not significantly improve health. Tobacco is an addictive substance, a fact that possibly impacts the relative success of different strategies to reduce

consumption. Tobacco consumption has external impacts, which is a feature not usually associated with diet-related health problems, other than indirectly through health care costs.

E. Summary of Existing Knowledge about the Impacts of Food Related Policies

Although Canada may not employ a fully integrated policy framework in an effort to affect consumer food choices, a number of initiatives exist. These include recently introduced mandatory nutritional labelling, social marketing strategies such as Canada's Food Guide, and the actions of various NGO organisations within Canada.

Concomitantly, the food industry, through generic, brand, and restaurant advertising strategies, is also attempting to impact consumer food choices. To a certain extent, future directions for food/nutrition policy should be established on the basis of the impacts of existing actions. It is worth noting that not all strategies that were applied to changing tobacco behaviour have been applied to food behaviour. Moreover, good examples of Canadian impact studies do not always exist. Therefore, the literature reviewed below includes examples of similar strategies undertaken in other countries.

The types of actions that can be considered in order to change food system behaviour in Canada include the following:

- Changing agricultural policies (this has not been extensively modeled to determine impacts on food choices);
- Revising Canada's Food Guide;
- Creating nutritional labelling (which has existed in the U.S. for longer than it has in Canada);
- Instituting "Health Check"-type programs similar to those that have been developed by NGOs;
- Establishing advertising restrictions (on "unhealthy" food, or on children's programs). These have not yet been applied, but they be necessary if consumer food choices are not affected by existing generic, brand, or restaurant advertising;

- Introducing “fat” taxes (which are currently receiving a great deal of regulatory attention, but whose impacts have not yet been assessed); and
- Maintaining subsidies for healthy food choices (an initiative that has not yet been applied in Canada).

Where possible, examples of the impacts of Canadian or other countries’ programs are illustrated in the tables below. A comparison of tobacco policies to similar modifications that may be used in the food industry is expressed in Table 12.

Table 12: Comparison of Tobacco and Food Behaviour Change Policies

Policy	Tobacco	Food
Marketing	Advertising bans imposed	Advertising bans for children proposed (Dalmeny <i>et al.</i> , 2003)
	Mandated inclusion of warning labels	Mandated nutritional labelling, “Health Check”-type programs
	Requirement to run anti-smoking advertisements in direct proportion to cigarette advertisements	
	Restricting advertising in the media where youth exposure is high	
	Limiting sports sponsorship to corporate names	
	Banning the use of promotional products	
Usage	Banning usage in public places and workplaces	
	Restricting smoking to certain areas in public places	
	Imposing age restrictions for the purchase of tobacco products	
Other	Excise taxation	Proposed “fat” taxes
	Health reports linking smoking to disease	Numerous examples (CIHI)
	Publicly funded anti-smoking campaigns	Canada’s Food Guide and Nutrition Recommendations, along with advertising of same
	Including health coverage for nicotine replacement therapies	Including fitness programs under health tax rebate programs in Australia and New York (IHRSA, 2004a and 2004b)
	Creating publicly funded programs designed to assist persons in quitting smoking	
	Banning vending machines that sell tobacco products	Banning sales of soft drinks in schools (Fried and Nestle, 2002)
	Establishing telephone help lines	Food industry making nutrition advice available through print media, telephone help lines, and the World Wide Web
	Observing the WHO World No-Tobacco Day	Making March “Nutrition Month” (an initiative sponsored by the Dietitians of Canada)

In many instances, the food industry is undertaking programs similar to those launched by the tobacco industry. The most notable difference between these initiatives is in the lack of usage restrictions that have been applied to food- and health-related issues. This is due, in part, to the differences in the health implications for tobacco (for

which no consumption is good) and food attributes (in which moderation is stressed, and most foods are acceptable if the individual engages in physical activity).

Figure 10: What is the Optimal Amount of Nutritional Information? (Cartoon Copyright 2003 The Center for Consumer Freedom)



Table 13: Summary of Recent Literature Regarding the Impacts of Food and Health Information on Consumer Behaviour

Author(s)	Year	Country	Topic	Objective	Method	Results	Comments
Lohmann and Kant	1998	U.S.	Advertising (Social)	To examine changes in advertising frequency of foods classified into the food group categories of the Food Guide Pyramid and to explore nutrition claims in response to the release of the Pyramid	Survey	No significant change was observed in the advertising frequency of various food products in the food group categories of the Food Guide Pyramid	The results support the notion that advertisers focus on the taste of food and avoid discussing certain substances contained in foods, in favour of talking about important nutrients
Saffer	1996	OECD	Advertising (Alcohol)	To determine the effect of advertising on alcohol consumption	Comparison of Results	Evidence appears to suggest that advertising increases alcohol consumption and counter-advertising and advertising bans reduce consumption to some degree	The effect of small changes in advertising can be minimal over certain ranges
Ippolito and Mathios	1995	U.S.	Advertising (Nutrition)	Examines the changes in fat and saturated fat consumption in the U.S. as information spread connecting these lipids to heart disease and cancer risks	Survey	The existence of diet-disease information may not be sufficient to affect behaviour fully: Advertising may play an important role in spreading this type of information	Substantial effects on market behaviour can be observed through the spread of this information
Saffer	1994	U.S.	Advertising (Alcohol)	To empirically estimate the effect of alcohol advertising on motor vehicle fatalities	Regression Analysis	Alcohol advertising has a significant and positive effect on motor vehicle fatalities	A ban on broadcast advertising of beer and wine or the elimination of the tax deductibility of all alcohol advertising expenditures would each save about 2,000 lives per year
Ippolito and Mathios	1990	U.S.	Advertising (Health Claims)	Examines the effects of consumer information on consumer and producer behaviour	Regression Analysis	Fibre cereal consumption increased once a ban on health-claims advertising was lifted. The development of fibre cereals also increased	The evidence suggests that advertising reduced differences across consumers by lowering the costs of acquiring information
Rayner, Boaz, and Higginson	2001	U.K. and Australia	Labelling	To examine how consumers use health-related food endorsements on food labels	Survey	There was limited use of the endorsements, both when shoppers were shopping normally and when they were asked to shop more healthily	One endorsement symbol seemed to be used more than others, perhaps because of the explicit nature of the symbol
Crutchfield, Kuchler, and Variyam	2001	U.S.	Labelling	To determine whether the provision of nutritional information on meat will lead to healthier food choices	Survey	The additional information may lead to healthier food choices and prevent stroke, heart disease, and cancer	The benefits of the program do not unambiguously outweigh the costs

Author(s)	Year	Country	Topic	Objective	Method	Results	Comments
Kozup, Burton, and Creyer	2001	U.S.	Labelling	To examine the possible effects associated with the health-related statements approved recently for inclusion on wine labels	Survey	A health-effects claim may be an effective promotional tool to increase penetration among non-drinkers	The approval of any additional claims on wine labels should be approached with caution
Teisl and Levy	1997	U.S.	Labelling	To assess the impact of labelling on consumer purchase behaviour	Regression Analysis	Labelling with respect to nutritional characteristics caused immediate changes in purchase behaviour that remain relatively constant over time	Providing health-related information does not lead to increased consumption of "healthy" foods across all food categories
Finke	1997	U.S.	Labelling	To determine whether the Nutrition Labelling and Education Act affects food choice	Regression Analysis	Those who often used food labels in the 1995 survey were significantly more likely to eat a low-fat diet	The results confirm a strong relationship between education and fat density
Teisl, Bockstael, and Levy	1997	U.S.	Labelling	To determine the factors that affect preferences for different label formats over the population	Regression Analysis	Respondents with particular nutritional information needs seemed to prefer the more detailed label formats	Individuals did not seem to prefer labels that reduce the time cost of information processing
Williams, McMahon, and Boustead	2003	Australia	Social Marketing	A study of the impact of the "Pick the Tick" food information program in Australia	Discussion	"Pick the Tick" was an effective catalyst for a substantial reduction in the salt content of cereal	A mean sodium reduction of just over 40% was observed
Young and Nestle	2003	U.S.	Social Marketing	To ascertain the difference between standard serving sizes and marketplace portions	Survey	Most marketplace portions exceed standard serving sizes by at least a factor of two	There is a need for nutritionists to explain these differences
Ringold	2002	U.S.	Social Marketing	Evaluation of boomerang effects of warnings, education programs, mass media campaigns, and other interventions on alcohol	Comparison of Results	In some cases, there may be so little gained in terms of improved consumer knowledge that the potential cost of oppositional attitudes or behaviour should receive substantial attention	Warning labels are publicly the most popular, but may not cause any change in behaviour
Piche and Garcia	2001	Canada	Social Marketing	To assess factors influencing food buying decisions in order to develop programs to encourage the purchase of healthy foods	Survey	Price, freshness, and health considerations are the top three factors considered when buying food	The information may help health educators design nutrition information and health promotion interventions at point-of purchase outlets to influence the purchase of healthier foods
Gulliver and Horwath	2001	New Zealand	Social Marketing	To investigate the readiness of New Zealand women to follow milk product consumption recommendations	Survey	Most women not currently meeting the recommendation for milk products per day are resistant to changing their habits	Health promotion programs would need to focus on the benefits of consuming adequate servings of milk products to change their behaviour

Author(s)	Year	Country	Topic	Objective	Method	Results	Comments
van Assema, Martens, Ruiter, <i>et al.</i>	2001	The Netherlands	Social Marketing	To assess whether dietitians or other nutrition educators should emphasize positive or negative consequences of making/not making dietary changes	Survey	The results show no significant difference in attitudes and intentions between positive and negative framing conditions	Failure to show that the positively framed messages were more effective may have been because respondents did not read the messages carefully enough or the arguments in the messages were not strong enough
McClelland, Keenan, Lewis, <i>et al.</i>	2001	U.S.	Social Marketing	A review of the literature on social marketing campaigns focused on low-income audiences	Comparison of Results	There is a need for studies to fill gaps in knowledge about how to measure food intake among low-income and minority program participants	Further research is also needed on methodological issues related to weight control practices and physical activity
Dube and Cantin	2000	Canada	Social Marketing	The authors suggest that the relative effectiveness of informational and emotional appeals in persuasive communications may depend on the dominant basis of the attitude towards the focal item	Regression Analysis	Affect-base responses are sensitive to an emotional appeal, while an informational appeal was more influential on consumption	Food liking may be a necessary step to be promoted on the route to food consumption
Emmons, Macario, Sorensen, <i>et al.</i>	1999	U.S.	Social Marketing	Tests the feasibility of implementing an extension of the Expanded Food and Nutrition Education Program	Survey	There is considerable potential for working through existing social networks to reach low-income populations	Strategies for maintaining participation across party sessions are needed
Alston, Chalfant, and James	1999	U.S.	Social Marketing	To evaluate an industry-funded nutrition education program	Survey	The "Exercise Your Options" program does affect the eating habits of children who are taught the program	Under reasonable assumptions, the benefits to milk producers from increased milk consumption outweigh the costs of the program
Havas, Anliker, Damron, <i>et al.</i>	1998	U.S.	Social Marketing	To evaluate a program that sought to increase fruit and vegetable consumption among low-income women	Survey	Changes in consumption were closely related to the number of nutrition sessions attended, baseline stage of change, race, and education	Programs for low-income groups are difficult to implement
Martin, Mader, and Pederson	1994	U.S.	Social Marketing	To study the effectiveness of Project LEAN on reducing cholesterol through changes in diet	Survey	The study revealed that participants' knowledge of coronary heart disease increased and blood cholesterol levels decreased.	Participants report that they regularly practice observance of suggested fat and cholesterol intake levels because of the education they received in the program

Author(s)	Year	Country	Topic	Objective	Method	Results	Comments
Samuels	1993	U.S.	Social Marketing	To review lessons learned about social marketing campaigns on nutrition	Review	<p>* Well placed publicity may be effective for national nutrition social marketing campaigns</p> <p>* Building a network of state and local programs sustains and strengthens the campaign</p> <p>* Partnerships with other organizations are essential for success, and collaborations with the private sector expanded the campaign</p>	Social marketing campaigns are expensive, and they require a national base of support, flexibility, and a well-conceived formative and summative evaluation
Närhinen, Nissinen, and Puska	1999	Finland	Social Marketing	To study the effectiveness of municipal food control and supermarket co-operation in affecting salt and saturated fat purchase behaviour	Regular Interviews	The direct impact of the intervention on reported purchase behaviour was small, but the study showed that health promotion work done in co-operation between food control and supermarkets does work	The project could serve as a model for similar larger health promotion projects, and might inspire other supermarkets to help their customers make healthier choices
Reger, Wootan, and Booth-Butterfield	1999	U.S.	Social Marketing	To study the use of advertising and public relations to promote a shift from whole or 2% milk to 1% or less fat milk	Scanner Sales Data and Interviews in City with Program and Comparison City Without	<p>* In the intervention city, low-fat milk sales increased from 29% of overall milk sales before the campaign to 46% of sales in the month following the campaign: The increase was maintained at the 6-month follow up</p> <p>* According to the telephone surveys, 34.1% of high-fat-milk drinkers reported switching to low-fat milk in the intervention community, compared with 3.6% in the comparison community</p>	<p>* A media-only approach may not prove effective in changing complex dietary behaviours</p> <p>* However if the message is broken down into simple steps, the use of paid advertising may prove a cost effective way to modify consumer behaviour</p>
Adamson, A. P. Curtis, J. Loughridge, A. Rugg-Gunn, A. Spendiff, and J. Mathers	2000	U.K.	Social Marketing	To measure the acceptability of foods high in starch and to determine the process of change by which consumers adopt a diet high in starch	Surveys and Interviews	* Three interventions are examined: A one off family health event promoting the benefits of starchy foods; a series of four cooking classes featuring the foods; or family participation in the first two activities, along with an opportunity to receive individualized advice: Dietary outcomes are measured at three and six months after the interventions	

Author(s)	Year	Country	Topic	Objective	Method	Results	Comments
Jacobson and Brownell	2000	U.S.	Taxation	Discusses taxation on foods that have low nutritional value	Discussion	Taxes of one cent per 12-oz soft drink and pound of candy, chips, and other snack foods would raise over \$1.5 billion annually	These small taxes would be more politically feasible and would have the support of many adults
Finkelstein	2004	U.S.	Multiple Categories	Presents an analysis of seven currently proposed nutrition interventions aimed at improving health and reducing obesity	Discussion	* Youth based interventions discussed are both economically and politically justified * Additional research is warranted for interventions targeting adults	Interventions targeted at children included: Elimination of soft drink vending machines in schools, implementation of nutrition guidelines for foods sold anywhere in schools, increasing availability of fruits and vegetables in schools, and regulation of marketing targeting children

Table 14: A Summary of Recent Research into the Effects of Various Types of Food Advertising

Author	Year	Name of Study	Type of Advertising	Commodity	Findings
Alston, J.M., J.A. Chalfant, and N.E. Piggott	1999	A globally flexible model of the effects of generic advertising of beef and pork on U.S. meat demand	Generic Advertising	Beef and Pork	Results show that advertising affected U.S. meat demand.
Apelbaum, E.	1999	The importance of brand name and quality in the retail food industry	Brand (and Private Label) Advertising	Retail Foods	Theoretical and empirical evidence is provided to show that both marketing tools play a significant role, but in quite different ways. Quality improvements by one firm will intensify the competition, and one firm will gain at the expense of its competitor. However, increasing brand name recognition relaxes the competition, and both firms can gain.
Arvola A., L. Lahteenmaki, and H. Tuorila	1999	Predicting the intent to purchase unfamiliar and familiar cheeses: The effects of attitudes, expected liking and food neophobia		Cheese	Neophobic persons rated the attitudes and expected and actual taste pleasantness lower than neophilics for all cheeses, except for the most familiar, mild cheese. This suggests that food neophobia also indicates the tendency not only to avoid, but also to dislike, novel foods. Attitudes and subjective norms measured before tasting were poor predictors of purchase intents after tasting, which implies the importance of taste and direct product experience in food choice.
Babicz-Zielinska, E.	1999	Food preferences among Polish young adults		Various Foods	Preferences for various foods were investigated among university students in northern Poland. Cucumbers and tomatoes from the vegetable category and peaches, sweet cherries, strawberries, grapes, and apples, all fruit of sweet taste, were the most preferred items. From the meats, chicken was selected by almost half the subjects, and cod and herring were most chosen among fish. Of the dairy products, hard cheese was ranked in the highest position, followed by low-fat cottage cheese and low-fat milk. For beverages, fruit juices, and for desserts fresh fruit, ice cream, and cheesecake were best liked. The significant choice factors for both vegetables and fruit included freshness and taste, and the least important were advertising and fashion.
Bailey, K.	1999	Milk marketing in the new millennium: It will be different!		Milk	In 1998, in the USA, each consumer drank 23.8 gallons of fluid milk products. That compares with 56.1 gallons of soft drinks, 15 gallons of fruit juices, and 13.9 gallons of bottled water. In terms of packaging, labelling, advertising, and marketing, milk competes poorly with soda, fruit juices, and bottled water.
Blisard, N.	1999	Advertising and what we eat – the case of dairy products	Generic Advertising	Milk and Cheese	Generic advertising has had a positive impact on both cheese and fluid milk sales. After calculating the added revenue to producers due to higher prices and the added costs of generic advertising, it is estimated that dairy producers received \$5.33 in return for each additional dollar spent on generic promotion.

Author	Year	Name of Study	Type of Advertising	Commodity	Findings
Blisard, N.	1999	Advertising's influence: The case of dairy products	Generic Advertising	Milk and Cheese	Generic advertising expenditures raised fluid milk sales about 6.0 percent in 1996. Retail sales of natural and processed cheese rose by about 2.3 percent. Gross returns to dairy farmers were estimated to be more than five times their increased advertising costs.
Blisard, W. N., D. Blayney, R. Chandran, and J. Allshouse	1999	Analyses of generic dairy advertising, 1984-97	Generic Advertising	Milk and Cheese	Gross returns to dairy farmers between September 1984 and September 1997 were estimated to increase by \$3.44 for each dollar spent on generic advertising.
Bogue, J.C., C.M. Delahunty, M.K. Henry, and J.M. Murray	1999	Market-oriented methodologies to optimize consumer acceptability of Cheddar-type cheeses		Cheddar Cheese	Five focus groups, representing different socio-economic categories, investigated in-depth influences on preferences and purchase behaviour. Cheddar-type cheese was the most frequently purchased and preferred cheese, and taste was the most important attribute influencing the purchase decision. This study showed that a combination of market and sensory analysis gave a more valuable explanation of consumer acceptance of Cheddar-type cheese than either method could on its own.
Chung, C. and H.M. Kaiser	1999	Measurement of advertising effectiveness using alternative measures of advertising exposure		Milk	The objective of this study was to examine the impacts of alternative measures of advertising exposure on the evaluation of advertising effectiveness. This study used quarterly data of post-buy actual GRPs and corresponding advertising expenditures for the New York City fluid milk market. The econometric analysis, however, found that the two alternatives produced quite different advertising elasticities and rates of return. The results indicate that the choice of advertising exposure measure may provide researchers with different evaluation results.
Cotterill, R. W., and A.W. Franklin	1999	An estimation of consumer benefits from the public campaign to lower cereal prices	Brand Advertising	Cereal	As predicted by the Dorfman Steiner theorem, branded advertising declined when the price cuts reduced brand price cost margins. Quaker's lower priced bagged copies of other firms' leading brands have grown rapidly and advanced Quaker's market share to over 10%, as Kellogg's share continues to decline and General Mills' share remains stable.
Coulibaly, N. and B.W. Brorsen	1999	Explaining the differences between two previous meat generic advertising studies	Generic Advertising	Beef and Pork	Past research disagreed about the effectiveness of meat generic advertising. Models of Ward and Lambert and Brester and Schroeder are re-estimated and tested for mis-specification. The Ward and Lambert Model is shown to be fragile. The statistically significant effect of advertising disappears with minor changes in the data and with a change in the sample period.

Author	Year	Name of Study	Type of Advertising	Commodity	Findings
Coulibaly, N. and B.W. Brorsen	1999	Resolving the conflicts between previous meat generic advertising studies	Generic Advertising	Beef and Pork	The 5:1 return on beef generic advertising found by Ward and Lambert has been widely quoted and has been used to justify spending on generic advertising. The conflicting findings about generic advertising effectiveness are shown to be primarily due to the data transformation used by Ward and Lambert. Results indicate that generic advertising does not substantially increase meat demand. However, the advertising elasticities are estimated inaccurately enough that we can also not reject that advertising is a breakeven investment.
Cranfield, J. and E.W. Goddard	1999	Open economy and processor oligopoly power effects of beef advertising in Canada	Generic and Brand Advertising	Beef	Generic and branded advertising significantly increased Canadian and U.S. beef demand. As well, historic generic beef advertising expenditure in Canada returned a net profit to Canadian producers. However, additional Canadian producer investment in generic beef advertising in Canada lowered producer profits, while investment in Canadian or U.S. brand advertising or U.S. generic advertising generated positive net returns.
Cuneo, A.Z.	1999	New 'Got Milk?' tactic: Got health?: California board tried benefit messages; TV spots go national in summer	Generic Advertising	Milk	The California board began the award-winning "Got Milk?" campaign in 1994, after the state's per capita consumption of milk dropped from 29 gallons in 1980 to 23 gallons in 1993. The advertising, along with a licensing effort and co-op efforts with cereal and cake marketers, has stopped the slide, with consumption levelling off at about 23 gallons.
Dana, L.P. and B.M. Oldfield	1999	Lublin Coca-Cola Bottlers Ltd.	Brand Advertising	Soft Drinks	In 1994, The Coca-Cola Company had allocated U.S. \$300 million for expansion in Poland; however, at that time, there were groups of Polish youths and young adults who looked down on the American way and preferred to preserve their own identity and heritage. Many would rather support a local cola brand than buy a Coke. The Lublin Coca-Cola Bottlers plc therefore faced particular problems in their attempt to increase sales of the product. Adopting a strategy of rising pattern advertising from a universal prototype enabled local experts to determine adaptations necessary for the Lublin geographic area.
Depken, C.A., D.R. Kamershen, and A. Snow	1999	Generic advertising of intermediate goods: Theoretical and empirical investigation	Generic Advertising	Milk	The effect of generic advertising on the producers of raw milk dairy farmers is greater than previously estimated, and a forced-contributions format did not alter the effective level of generic advertising purchased.
Duffy, M.	1999	Advertising in consumer allocation models: Choice of functional form		Alcoholic Beverages	Advertising is found to have had no significant effect upon the product composition or level of total alcoholic drink consumption in the United Kingdom over the period from 1964 to 1996, and this result is robust with respect to variations in the specification of functional form.
Duffy, M.	1999	The influence of advertising on the pattern of food consumption in the United Kingdom	Brand Advertising	11 Broad Food Groupings	The econometric estimates reveal no evidence of advertising affecting the demand for food as a whole at the expense of non-food demand. There is almost no evidence of advertising affecting the product composition of any given level of total food demand.

Author	Year	Name of Study	Type of Advertising	Commodity	Findings
Gallo, A.E.	1999	Food advertising in the United States	Advertising Statistics	Various Foods	Food manufacturers spent \$7 billion in advertising in 1997. Most of this advertising focused on highly processed and highly packaged foods, which also tend to be the foods consumed in large quantities in the United States, relative to Federal dietary recommendations, such as the Dietary Guidelines for Americans. Advertising expenditures on meat, fruits, and vegetables are negligible. In contrast, the U.S. Department of Agriculture spent \$333.3 million on nutrition education, evaluation, and demonstrations. This is approximately what the food industry spent on advertising just for coffee, tea and cocoa, or for snacks and nuts— slightly more than half (60 percent) the amount spent on advertising for carbonated soft drinks, and less than half the amount spent promoting beer, or candy and gum, or breakfast cereals.
Hill, D. J., R.R. Piggott, and G.R. Griffith	1999	Profitability of incremental generic promotion expenditure by Australian dairy farmers	Generic Advertising	Dairy Products	Competitive market price and quantity outcomes for the Australian dairy industry are estimated. The impacts of increments in dairy product and competing product generic promotion expenditures on dairy farmers' profits are assessed using equilibrium displacement modelling. Finally, graphical procedures are used to examine the effects of dairy industry regulation on the profitability of dairy promotion.
Hruschka, H., M. Lukanowicz, and C. Buchta	1999	Cross-category sales promotion effects		Grocery Products	The authors introduce a multivariate binomial logit model measuring cross-category dependence and the sales promotion effects of a retail assortment. This model requires as data both the market baskets of individual shoppers and the categories currently promoted in retail outlets. A special section describes the stepwise procedure used to estimate the parameters of this model. Its application is demonstrated analyzing 6147 purchases that were acquired in a medium-sized supermarket. The authors discuss the managerial relevance of this model for sales promotion decisions of retail firms.
Hyde, J. and K. Foster	1999	Exploring the dynamic relationship between advertising and revenues within the pork industry	Generic Advertising	Pork	This research tests for causality between indexed retail pork revenues and pork advertising. Evidence of feedback between revenues and total pork advertising was found, but was not found between revenues and generic advertising. In fact, generic advertising was found to have no significant impact on indexed retail pork revenues.
Kamp, P.R.V. and H.M. Kaiser	1999	Irreversibility in advertising-demand response functions: An application to milk	Generic Advertising	Milk	Irreversibility is found to exist, and, in particular, consumers are found to react more rapidly to increases in advertising compared to decreases. This result may have important implications for optimal temporal advertising strategies.

Author	Year	Name of Study	Type of Advertising	Commodity	Findings
Kinnucan, H. W.	1999	Advertising traded goods	Generic Advertising	55 Agricultural Commodities	The major contribution of this research is theory development. In particular, the analysis extends Nerlove and Waugh's theory of cooperative (generic) advertising to the case of traded goods, where the advertising cost is shared with consumers through tax shifting and, where applicable, with foreign producers through advertising import levies. It builds on the work of Alston, Carman, and Chalfant by putting their graphical analysis into mathematical form and by extending their analysis to the net importer case. The net importer case has some unique aspects, not the least of which is the expanded role for supply response as a determinant of generic advertising effectiveness.
Kinnucan, H.W.	1999	Optimal generic advertising decisions in supply-managed industries: Clarification and some further results	Generic Advertising	Milk	Supply control enhances the incentive to promote ancillary trade policies that protect the domestic industry from foreign competition. Incentives are intensified when supply control is coupled with a price discrimination scheme that renders the supply of the agricultural product to the higher-priced (premium) market perfectly elastic. In this case, a per-unit levy imposed on the premium market to finance the advertising is shifted entirely to consumers, which means that the producer cost of advertising the premium product is nil. This, in essence, is the situation for fluid milk in Canada, Taiwan, and California, which explains in part why fluid milk dominates the generic advertising scene in these regions. This article investigates these and related issues in some detail, using an earlier analysis by Goddard and McCutcheon as the point of departure.
Kinnucan, H.W. and Y. Miao	1999	Media-specific returns to generic advertising: The case of catfish	Generic Advertising	Catfish	Further analysis indicated that the media had no reliable effect on demand, which suggests that scale is important. Losses sustained from the apparently ineffectual media were more than offset by gains from the effective media (magazines and radio), so that returns overall, net of opportunity cost, were positive. The historical media allocation, however, was inefficient in the sense that a different media mix would have resulted in greater industry profits.
Kokkinaki, F. and P. Lunt	1999	The effect of advertising message involvement on brand attitude accessibility	Brand Advertising		The results support the hypothesis that the brand attitudes formed under conditions of high advertising message involvement were significantly more accessible compared to those formed under lower levels of involvement. Findings are discussed in terms of the impact of involvement on cognitive elaboration during attitude formation and of the relationship between involvement and accessibility as two dimensions of attitude strength.

Author	Year	Name of Study	Type of Advertising	Commodity	Findings
Mathios, A. D. and P. Ippolito	1999	Health claims in food advertising and labelling—Disseminating nutrition information to consumers	Brand Advertising	Food	This chapter evaluates whether policy changes that took place in the mid-1980's, and allowed food manufacturers to explicitly link diet to disease risks in advertising and labelling, appear to have improved consumers' food choices (the information hypothesis), or, as many critics fear, to have confused consumers sufficiently to slow improvements in diet that would otherwise occur (the consumer confusion hypothesis).
Nelson, J.P.	1999	Broadcast advertising and U.S. demand for alcoholic beverages	Brand Advertising	Alcoholic Beverages	The results for the three beverages and for total alcohol indicate that advertising has little or no effect on demand. The empirical evidence thus supports the notion that regardless of media, advertising affects mainly brand shares.
Patterson, P.M., H. Olofsson, T.J. Richards, and S. Sass	1999	An empirical analysis of state agricultural product promotions: A case study on Arizona Grown		Food and Agricultural Products	It was found that consumers were largely unaware of Arizona's program. However, most indicated that they would prefer Arizona products over others. The promotion was found to have little to no effect on product sales and only a modest direct effect on consumer preferences.
Pelletier, D. L., A. Kendall, L. Kettel Khan, and A. Mathios	1999	Nutrition and dairy industry benefits associated with promoting low-fat milk: Evidence from the 1989 CSFII	Generic Advertising	Low-fat Milk	These results are consistent with other evidence that the dairy industry may derive economic benefits from promoting low-fat milk. The nutritional benefits are less clear.
Richards, T. J. and P.M. Patterson	1999	The economic value of public relations expenditures: Food safety and the strawberry case	Generic Advertising	Strawberries	It is found that adverse information reduces grower profits, but that positive information can partially offset their effects. It is suggested that grower groups could redirect funds used for promotion to food safety initiatives.
Richards, T.J.	1999	Dynamic model of fresh fruit promotion: A household production approach	Generic Advertising	Fresh Fruit	This study develops a dynamic household production model of U.S. fresh fruit consumption, which it uses to evaluate the effectiveness of advertising and promotion expenditures by the Washington Apple Commission. Estimates from a dynamic-dual generalized Leontief system show direct apple sales, but advertising has positive spillover effects to sales of other fruits, whereas promotion reduces sales of competing products.
Richards, T.J. and P.M. Patterson	1999	The impact of promotion and advertising on choice of fruit category and apple variety: A latent class approach	Generic Advertising	Fruits	To help target the more responsive segments, ex post demographic analysis finds relationships between advertising responsiveness and a set of demographic characteristics. Using A.C. Nielsen panel scanner data for fruits, this study finds that a multiple-segment model provides a better fit to the data, and that these segments differ significantly in their responsiveness to marketing variables. By targeting marketing activities to their most responsive segments, the effectiveness and efficiency of commodity promotion can be dramatically improved.

Author	Year	Name of Study	Type of Advertising	Commodity	Findings
Sims L. S.	1999	Federal Trade Commission study on food health claims in advertising: Implications for nutrition education and policy	Brand Advertising	Foods	Increasingly, foods are being marketed on the basis of health-promoting properties their sellers claim they possess. The Federal Trade Commission (FTC) has published a study, "Generic Copy Test of Food Health Claims in Advertising," in which they researched various types of disclosures and warnings in food ads on consumers' interpretation of the information and their ability to use it in answering questions related to the test ads. The study is reviewed and implications for nutrition education and for public policy are presented.
Tomek, W. G. and H.M. Kaiser	1999	On improving econometric analyses of generic advertising impacts	Generic Advertising	Milk	This result contrasts with an earlier, published model that did not provide stable estimates as new data points became available. It is difficult, however, to apply the general-to-specific modeling approach because it requires the researcher to specify an initial general model. But analysts are unlikely to agree on this initial model, and if this is true, then the "generality" of the model is in question. Moreover, it is a fact that the quality of the available data is sometimes insufficient to obtain the desired stable estimates.
Vakratsas, D. and T. Ambler	1999	How advertising works: What do we really know?			The authors propose that advertising effects should be studied in a space, with affect, cognition, and experience as the three dimensions. Advertising's positioning in this space should be determined by context, which reflects advertising's goal diversity, product category, competition, other aspects of mix, stage of product life cycle, and target market.
Vande Kamp, P. R., and H.M. Kaiser	1999	Irreversibility in advertising-demand response functions: An application to milk	Generic Advertising	Milk	Irreversibility is found to exist, and, in particular, consumers are found to react more rapidly to increases, as compared to decreases, in advertising. This result may have important implications for optimal temporal advertising strategies. Key words: Advertising, asymmetry, dairy, generic promotion, irreversible.
Ward, R.W.	1999	Evaluating the beef promotion checkoff: The robustness of the conclusions	Generic Advertising	Beef	Using household data and aggregate beef disappearance data, recent results confirm earlier work by Ward and Lambert showing the effectiveness of the beef checkoff, even though the impact on cattle prices is small relative to other factors.
Williams, G.W.	1999	Commodity checkoff programs as alternative producer investment opportunities: The case of soybeans	Generic Advertising	Soybeans	The analysis clearly indicates that the soybean checkoff program has performed well as an investment alternative for soybean farmers and warrants consideration for continuation. In contrast, a benefit-cost analysis of the soybean checkoff program yields ambiguous results regarding both the magnitude of the producer benefit and whether the benefit is sufficiently large relative to cost to justify continuation of the program.
Xiao, H., H.W. Kinnucan, and H.M. Kaiser	1999	Effects of advertising on U.S. non-alcoholic beverage demand: Evidence from a Rotterdam model	Generic Advertising	Non-alcoholic Beverages	Advertising effects are statistically significant, but modest. The question of whether milk advertising is profitable when demand interrelationships are taken into account must await additional research.

Author	Year	Name of Study	Type of Advertising	Commodity	Findings
Zhang, M., R.J. Sexton, and J.M. Alston	1999	Does branded food product advertising help or hurt farmers?	Brand Advertising	Agricultural Products	Farmers may benefit or lose from brand advertising under alternative market conditions.
Alston, J.M., J.A. Chalfant, and N.E. Piggott	2000	The incidence of the costs and benefits of generic advertising	Generic Advertising	Beef, Pork, and Poultry	Individual commodity advertising can result in negative returns to producers of other commodities, and can affect aggregate consumer welfare, food processor profits, tax revenues, and social welfare. Positive returns to individual commodities are not necessarily sufficient for positive social returns.
Chung, C. and H.M. Kaiser	2000	Do farmers get an equal bang for their buck from generic advertising programs? A theoretical and empirical analysis	Generic Advertising	Agricultural Commodities	Analytical results indicate that producers having less elastic supply response capture more benefits per dollar expended than producers with more elastic supply responses. The extent of unequal distribution depends on parameters characterizing industries. The inequality may not be a significant problem for some industries, especially where the firm-level supply elasticities are not substantially different among producers; but, it may be an important issue when industries have substantial differences in firm-level supply elasticities and firm sizes and experience large demand shifts due to advertising programs.
Chung, C. and H.M. Kaiser	2000	Determinants of temporal variations in generic advertising effectiveness	Generic Advertising	Milk	Results indicate that advertising strategies and market environments play important roles in determining advertising effectiveness. Particularly, demographic factors were more important than economic factors. The results also suggest that when the market conditions are unfavourable due to increase in price, percentage of African Americans and percentage of food expenditures for eating away from home, advertising becomes more important and effective.
Holloway, G.J., L.J. Peyton, and G.R. Griffith	2000	Was the Australian Meat and Live-stock Corporation's advertising efficient?	Generic Advertising	Red Meats	Robust inferences about program efficiency are contained in the coefficients of changes in promotion effort regressed against movements in farm price and quantity. Empirical evidence of program efficiency is inconclusive. While the deeper issue of efficient disbursement of funds remains an open question, there is evidence, at least, of efficient taxation.
Kinnucan H.W. and O. Myrland	2000	Optimal advertising levies with application to the Norway – EU Salmon Agreement	Generic Advertising	Salmon	When applying the model to the Norway-EU Salmon Agreement, the results suggest that the current three percent levy may be welfare-increasing from the Norwegian producer perspective. Whether the current budget allocation of 67 per cent to the EU is efficient critically depends on whether advertising elasticities across markets are uniform, a hypothesis that needs to be tested.

Author	Year	Name of Study	Type of Advertising	Commodity	Findings
Lariviere R., B. Larue, and J. Chalfant	2000	Modeling the demand for alcoholic beverages and advertising specifications	Brand Advertising	Beer, Wine, Spirits, and Soft Drinks	From the identified dominant specification, it was found that advertising has very subtle effects on expenditures on alcoholic beverages (group and individual beverages). Thus, advertising is not effective in enlarging markets and this suggests that firms (especially breweries) use advertising to compete in zero-sum market share games. From a public policy perspective, results are comforting, but future research should investigate whether the neutral effect of advertising on aggregated expenditures hides substantial offsetting changes in the drinking habits of individuals.
Alston, J. M., J.W. Freebairn, and J.S. James	2001	Beggar-thy-neighbor advertising: Theory and application to generic commodity promotion programs	Generic Advertising	Beef and Pork	Profits from generic advertising by a producer group often come partly at the expense of producers of closely related commodities. In an illustrative example using 1998 data for U.S. beef and pork, the noncooperatively chosen expenditure on beef and pork advertising is more than three times the cooperative optimum.
Duffy, Martyn	2001	Advertising in consumer allocation models: Choice of functional form	Brand Advertising	Alcoholic Beverages	Advertising is found to have had no significant effect upon the "product composition" or "level" of total alcoholic drink consumption in the UK over the period from 1964 to 1996, and this result is robust with respect to variations in the specification of functional form.
Kinnucan, H. W. and L. Paudel	2001	Upstream effects of generic advertising: The case of catfish	Generic Advertising	Catfish	Muth's model is adapted to determine the effects of generic advertising on upstream factor markets in a competitive industry where funds for promotion are raised through a feed tax. Optimality conditions indicate that a feed tax is an inferior funding mechanism. That is, the resulting promotion budget, in general, is too small to maximize producer surplus at the farm level. Applying the model to the U.S. catfish industry, results suggest that raising the feed tax from \$5 to \$6 per ton is welfare increasing for farm, feed, and non-feed sectors alike.
Myrland, O. and H.W. Kinnucan	2001	Direct and indirect effects of generic advertising: A model with application to salmon	Generic Advertising	Salmon	Applying the model to an advertising campaign for salmon in France, results indicate that consumer recall of television ads is associated with an increased consumption frequency of 13.7%. Overall, study results suggest that television ads for salmon should be kept simple and repeated often so as to maintain "top-of-mind" awareness.
Scholderer, J. and K.G. Grunert	2001	Does generic advertising work? A systematic evaluation of the Danish campaign for fresh fish	Generic Advertising	Fresh Fish	Consistent with the intended effects of the campaign, availability in shops and meal preparation skills lost their influence in the post-campaign survey (effective N = 523). Instead, family norms were the only direct as well as indirect (mediated by intention to buy) influences on consumption frequency. Mean levels of intention to buy and consumption frequency were significantly higher after the campaign.

Author	Year	Name of Study	Type of Advertising	Commodity	Findings
Verbeke, W. and R.W. Ward	2001	A fresh meat almost ideal demand system incorporating negative TV, press and advertising impact	Generic Advertising	Fresh Meat	Own-price elasticities are relatively low, indicating a low fresh meat demand sensitivity to price changes over this period, which was dominated by mass media reports about the potential health risks associated with meat consumption. With relatively little effort being undertaken and with its current strategy, fresh meat advertising is found to have only a minor impact compared with negative press.
Cranfield, J. A. L.	2002	Optimal advertising with traded raw and final goods: The case of variable proportions technology	Generic Advertising	Beef	Simulation for the Canadian beef industry in the post-WTO environment demonstrates how optimal advertising intensity falls as export demand elasticities for beef and live cattle become more elastic. Results show the optimal advertising intensity ranges between 0.05% and 0.22% of farm-level market revenue.
Cranfield, J. A. L.	2002	Optimal generic advertising with a rationed related good: The case of Canadian beef and chicken markets	Generic Advertising	Beef and Chicken	Results underscore the importance of accounting for cross-product advertising effects. When these effects are present (absent), the optimal generic beef advertising intensity in Canada is shown to fall (rise) with elimination of supply management in Canada's chicken sector.
Crespi, J. M. and S. Marette	2002	Generic advertising and product differentiation	Generic Advertising	Prunes	Analytical results show that if the benefits from generic advertising from increased demand are outweighed by the costs from lower product differentiation then high-quality producers will not benefit from generic promotion. Hypotheses are tested empirically under a conditional-logit approach using retail-market sales and advertising data for the U.S. prune industry. Results from this study provide evidence that generic advertising has a slight differential effect on the perceived qualities of different brands.
Benson, J.T., F.J. Breidt, and J.R. Schroeter	2002	Television advertising and beef demand: Bayesian inference in a random effects Tobit model	Generic Advertising	Beef	As far as advertising's effects are concerned, the results of this analysis reaffirm the Jensen and Schroeter finding: The experimental television advertising campaign was not effective in increasing household purchases of beef.
Capps, O. Jr., and J. Park	2002	Impacts of advertising, attitudes, lifestyles, and health on the demand for U.S. pork: A micro-level analysis	Generic and Brand Advertising	Pork	Using data from the 1994 – 96 CSFII/DHKS, we identify and assess factors affecting the decision to consume pork, and conditional on consuming pork, decisions about the amount of pork intake. Branded and generic advertising of pork play a prominent role in both decisions. Beef advertising, however, does not significantly affect either the probability of consuming pork or the amount of pork intake.
Depken, C.A. II, D.R. Kamerschen, and A. Snow	2002	Generic advertising of intermediate goods: Theory and evidence on free riding	Generic Advertising	Milk	The authors test the model in the U.S. fluid milk industry, and focus on the effects of generic advertising on the intermediate demand for milk, since dairy farmers support the generic advertising. Taking this approach, they find that generic advertising had a positive influence on farm-level demand for milk, but did not achieve joint profit maximization.

Author	Year	Name of Study	Type of Advertising	Commodity	Findings
Herrmann, R., S.R. Thompson, and S. Krischik-Bautz	2002	Bovine spongiform encephalopathy and generic promotion of beef: An analysis for "Quality from Bavaria."	Generic Advertising	Beef	Empirical evaluation of the economic effectiveness of a program that promoted Bavarian beef as safe at the same time that consumers were becoming increasingly concerned over the safety of the beef supply. Econometric estimates of both effects are provided and a model is proposed to assess the corresponding economic welfare implications. The results show that the regional promotion of Bavarian beef increased demand by 4.6%. The welfare effects of the Bavarian government-financed program were positive for both producers and consumers. Private and social benefit cost ratios suggest that the aggregate welfare gains due to promotion more than compensated for the cost of the program.
Kinnucan, H. W. and O. Myrland	2002	Optimal seasonal allocation of generic advertising expenditures with product substitution: Salmon in France	Generic Advertising	Salmon	Applying the rules to Norwegian salmon promotion in France for the period 1996 – 98, study results suggest that the actual quarterly allocation of 4, 52, 17, 27 was inefficient in that the optimal allocation of 23, 26, 20, 31 would have enhanced producer profits by 9.8 million kroner, equal to 27% of the total promotion outlay. Ignoring product substitution distorts the allocation rule, in that optimal expenditures in the second quarter are overstated by 36%, with corresponding understatements in the remaining quarters. Overall, an even expenditure pattern is deemed more profitable than pulsing.
Richards, T. J. and P.M. Patterson	2002	Minimum effective scale in export promotion	Generic Advertising	Apples	An empirical example of apple promotion from Washington State (USA) finds minimum effective scale levels for four key promotion activities among several Latin American countries.
Saffer, H. and D. Dave	2002	Alcohol consumption and alcohol advertising bans	Brand Advertising	Alcoholic Beverages	The primary conclusions of this study are that alcohol advertising bans decrease alcohol consumption and that alcohol consumption has a positive effect on the legislation of advertising bans. The results indicate that an increase of one ban could reduce alcohol consumption by 5% to 8%. The alcohol price elasticity is estimated at about 0.2. The results suggest that recent exogenous decreases in alcohol consumption will decrease the probability of enactment of new bans and undermine the continuance of existing bans. Canada, Denmark, New Zealand, and Finland have recently rescinded alcohol advertising bans. Alcohol consumption in these countries may increase or decrease at a slower rate than would have occurred had advertising bans remained in place.
Schmit, T. M.	2002	Identifying the effects of generic advertising on the household demand for fluid milk and cheese: A two-step panel data approach	Generic Advertising	Milk and Cheese	Generic advertising programs for fluid milk and cheese were effective in increasing conditional purchase quantities, with very little effect on the probability of purchase. In contrast to aggregate studies, the long-run generic advertising elasticities for cheese were larger than for those of fluid milk. Advertising response varied considerably across sub-product classes, while branded advertising expenditures were largely insignificant.

Author	Year	Name of Study	Type of Advertising	Commodity	Findings
Yiannaka, A., K. Giannakas, and K.C. Tran	2002	Medium, message and advertising effectiveness in the Greek processed meats industry	Generic Advertising	Processed Meats	Empirical results strongly reject the hypothesis of homogeneous consumer response to all kinds of advertising that is implicit in studies that aggregate advertising expenditures. The results also indicate an inefficient allocation of advertising resources by the firms in the sector; advertising in the least utilized print media was determined to be by far the most effective strategy during the study period.
Zhang, M. and R.J. Sexton	2002	Optimal commodity promotion when downstream markets are imperfectly competitive	Generic Advertising	Agricultural Commodities	The conditions that characterize optimal advertising intensity under perfect competition for funds generated from either per-unit or lump-sum taxes do not, in general, hold when marketing is imperfectly competitive. Simulation analyses show that imperfect competition always reduces farmers' optimal advertising expenditure and that an imperfectly competitive marketing sector may capture half or more of the benefits from the funds that are expended.
Ackerberg, D.A.	2003	Advertising, learning, and consumer choice in experience good markets: An empirical examination	Brand Advertising	Grocery Products	Empirical results suggest that in this market, advertising's primary effect was that of informing consumers. The estimates are used to quantify the value of this information to consumers and to evaluate the welfare implications of an alternative advertising regulatory regime.
Boetel, B.L. and D.J. Liu	2003	Evaluating the effect of generic advertising and food health information within a meat demand system	Generic Advertising	Beef, Pork, Poultry, and Fish	The results also indicate that there is a significant negative spill-over effect of beef advertising on pork consumption and vice versa. However, a positive spillover effect of pork advertising on poultry consumption is also identified.
Chung, C. and H.M. Kaiser	2003	Distributional effects of commodity promotion programs by type of producer	Generic Advertising	Agricultural Commodities	The result of the analysis indicates that producers may not equally benefit from the collectively funded programs. Marginal profit analysis indicates that a producer-financed promotion program may have greater benefits for producers with more endowed fixed factors than those with less endowed fixed factors.
Duffy, M.	2003	Advertising and food, drink and tobacco consumption in the United Kingdom: A dynamic demand system	Brand Advertising	Food, Drink, and Tobacco	Model estimates confirm that the restrictions of price homogeneity and symmetry appear to be consistent with the data, that they yield measures of the various types of demand elasticity that are in general plausible, and that they confirm the strong influence of prices on the allocation of consumer expenditure. However, they find little evidence to support the hypothesis that advertising has the power to effect marked changes in the inter-product pattern of consumer demand in the U.K.
Duffy, M.	2003	On the estimation of an advertising-augmented, cointegrating demand system	Brand Advertising	Beer, Spirits and Wine	While taxation may restrain consumption of these goods, advertising restrictions are likely to be ineffective. There are limits to taxation, however, and advertising effects need to be researched further.

Author	Year	Name of Study	Type of Advertising	Commodity	Findings
Kaiser, H. M. and T.M. Schmit	2003	Distributional effects of generic dairy advertising throughout the marketing channel	Generic Advertising	Milk and Cheese	Generic advertising, regardless of product, positively affected fluid milk processor gross margins, while increases in cheese advertising reduced the price margin for cheese processors. In general, own-product advertising had larger price margin impacts for fluid milk processors, while cheese processors benefited more from larger supply gains. These larger supply effects translated further into larger increases in raw milk costs, thus tightening cheese price margins. Because changes in cheese supplies affect both Class I and Class III prices, input prices to processors are affected relatively more by increases in cheese advertising, as opposed to fluid milk advertising. The relatively larger gains in output prices, combined with lower relative increases in input class prices contributed to higher producer welfare impacts for fluid milk processors than for cheese processors, when confronted with equivalent increases in their own-product advertising.
Kinnucan, H. W.	2003	Optimal generic advertising in an imperfectly competitive food industry with variable proportions	Generic Advertising	Beef	Applying the model to the U.S. beef industry, the authors find that for plausible parameter values, market power reduces farmers' incentives to promote. This suggests that the Dorfman-Steiner theorem, suitably modified to account for factor substitution, suffices to indicate optimal advertising intensity in the U.S. beef sector.
Kinnucan, H. W. and O. Myrland	2003	Free-rider effects of generic advertising: The case of salmon	Generic Advertising	Salmon	Results suggest that program intensification would have a positive effect on total (worldwide) producer surplus in the short run, but the gain's distribution is uneven. Specifically, Norway would receive 23% of the gain, compared to 48% for United Kingdom producers. By way of comparison, Norway and U.K. world trade shares are 47% and 16%, respectively. The disproportionate gains to U.K. producers are due to a double free ride from the export tax, used to fund the advertising increase, and from the advertising itself.
Nelson, J. P.	2003	Advertising bans, monopoly, and alcohol demand: Testing for substitution effects using state panel data	Brand Advertising	Alcoholic Beverages	Bans of advertising do not reduce total alcohol consumption, which partly reflects substitution effects. The study thus demonstrates the possible unintended consequences of restrictive alcohol regulations.
Price, G. K. and J.M. Connor	2003	Modeling coupon values for ready-to-eat breakfast cereals	Brand Advertising	Breakfast Cereals	Cereal prices are positively affected by coupon values, advertising expenditures, input costs, and the prices of competing brands. Inventory levels are negatively correlated with brand price.
Schmit, T. M.	2003	The impact of generic advertising on U.S. household cheese purchases: A censored autocorrelated regression approach	Brand Advertising	Cheese	Results indicate that relatively larger gains in household cheese purchases from generic advertising may be realized by targeting infrequent purchasers to increase purchase frequencies, rather than by targeting households in general to increase their conditional purchase levels.

The various empirical studies on the impacts of food advertising and social marketing summarized in Tables 13 and 14 provide mixed messages. In many cases, food advertising serves as a potent tool. Generic advertising, in particular, appears to be important for a range of commodities. However, policy makers must question whether generic advertising leads to sub-optimal social results, in terms of food choices. If so, then policy makers may choose to restrict generic advertising (or any other kind of advertising) or simply choose not to implicitly subsidize it (for example, through including generic advertising in the cost of production formulae for various supply managed commodities).

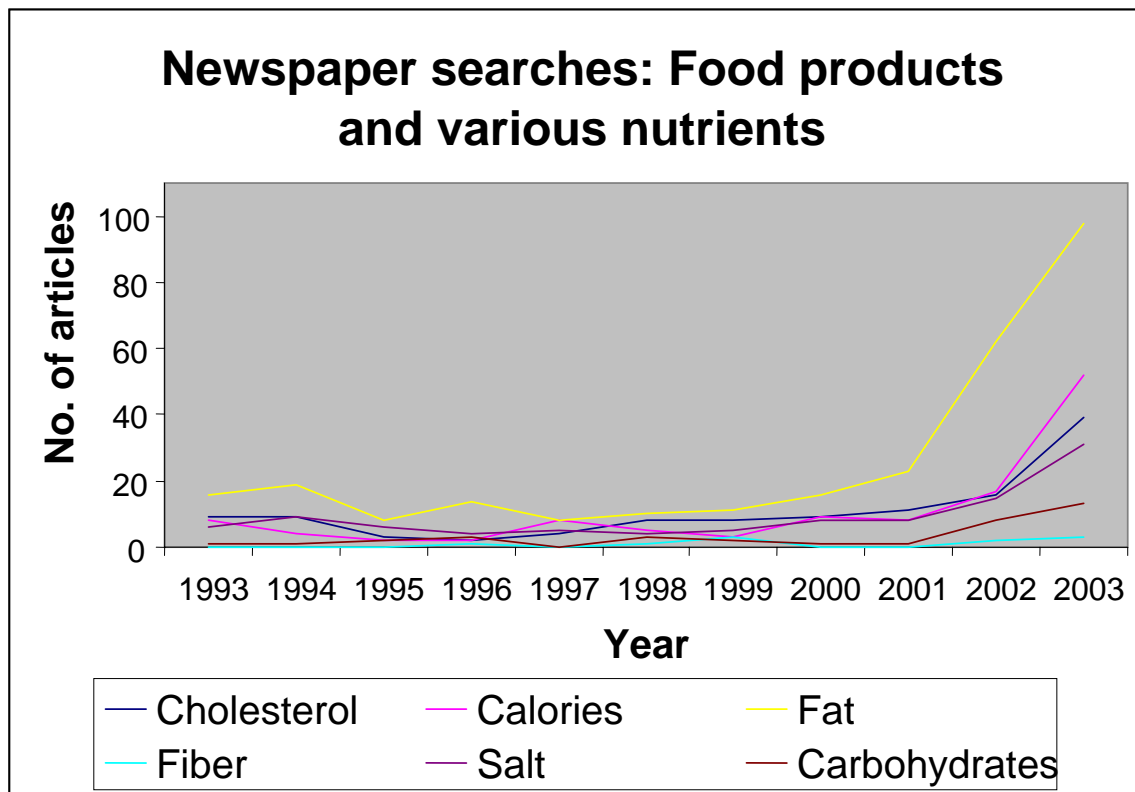
There is a substantive difference between the impacts of advertising on food consumption and its impacts on tobacco consumption. In many cases, tobacco advertising bans were believed to be ineffective in reducing tobacco consumption, due to a difficulty in establishing a link between cigarette advertising and aggregate cigarette sales. In the tobacco industry, most advertising is brand focused; thus, tobacco advertisements induce smokers to switch brands, but do not seem to increase aggregate consumption. However, in the food industry, there seems to be a well-established connection between brand and generic advertising and aggregate sales/disappearance of many food products (particularly when fast food restaurant sales and restaurant advertising are included). Hence, imposing restrictions on food advertising to certain groups or to society as a whole may achieve more significant impacts on behaviour than do similar tobacco advertising restrictions.

Various social marketing strategies do appear to have positive impacts. Many of the studies are conducted using focus or panel groups; therefore, some individuals have questions about how widely these messages will be adopted by the general public and for how long. It is worth noting that any serious attempts to sway aggregate population behaviour with respect to food choices will likely require media exposure that is similar to (unrestricted) media exposure for less desirable food choices. In *America's Eating Habits* (1999), Gallo points out that food manufacturers in the U.S. spent \$7 billion in advertising in 1997. In contrast, the USDA spent \$333.3 million on nutrition education, evaluation, and demonstrations, less than half the amount spent on advertising beer or candy or gum or breakfast cereals. Even though Canadian NGOs spend monies on social marketing, the statistics in this country are probably similar. In reality, it may be difficult to make the competitive messages heard. The food social marketing studies to date have appeared to produce outcomes similar to those related to tobacco social marketing strategies. A social marketing focus on youth has resulted in changed tobacco behaviour, and this is something that food social marketers seem to be taking into account. For example, Health Canada has recently run a targeted children's advertising campaign that uses

Canada’s Food Guide recommendations to advocate for healthy food choices. School restrictions on the sales of certain foods may also serve as an important component of food behaviour modification.

One conflicting factor about food information is the fact that media coverage of food-related health issues may serve to both reinforce and detract from social marketing and nutritional education messages. A good example of this can be gleaned from the literature on egg consumption and coronary heart disease: In 1961, the message was, “Avoid egg yolks” (Revell 1961, cited in McIntosh 2000), but in 1999, researchers were saying, “Eggs aren’t nearly as bad for you as doctors used to think” (Lemonick 1999, cited in McIntosh 2000). Although the egg example is extreme, inconsistencies over time can make it difficult for consumers to know how much faith to place in social marketing messages. Figure 11 below illustrates the fact that there has been a significant increase in media coverage of food-related health issues.

Figure 11: Media Coverage of Nutritional Issues Has Increased Over the Last Decade



V. Conclusions and Recommendations

This literature review is not comprehensive. As suggested by Figure 1 and Figure 8 above, the influences on food choice and nutrition are numerous and complex, and there are many roles played by governmental policy that have not been addressed in the previous four sections. Despite this, some useful conclusions can be drawn from the information summarized above. When viewed through an economic framework of policy analysis, certain recommendations are also supported.

Economic theory suggests that government intervention into the public realm is justified in the presence of market failures. Such failures include imperfect market competition, high external costs or benefits to third parties or society in general, imperfect information, and the provision of public goods. All of these failures are evident to some extent in the market for health and wellness. In regards to food policy and health, the single most important failure is probably the lack of full information, especially on the part of consumers. The high societal costs of diseases related to food consumption are another important failure that would not be properly accounted for in the absence of interventions. In addition to the economists' traditional justifications for regulation, there are other "special" roles assumed by our government that are relevant here. The protection of children, the regulation of broadcast media, and a general interest in individual health beyond the costs imposed on society are all part of the debate regarding appropriate food and health policies.

When a lack of complete information is a large failure in the marketplace, a government can either step in directly to provide information or can impose regulations to compel manufacturers to do so. Since early in the last century, the Canadian government has played a role as both a generator and publicist of health information. This role is perhaps more important today than ever, as consumers are increasingly faced with an abundance of health reports and claims on their televisions, at their desktops, in their cars, in newspapers, and on the streets. For individual consumers, evaluating and processing these claims is a difficult and time-consuming task. At its best, government acts as a trusted voice in the fray and as an arbiter of apparently conflicting messages. In order to be effective in this, agencies must first set clear and consistent goals for what is to be communicated. Once these are decided, messages must be clear and concise. As Nestle (2000) notes, "Because dietary guidelines affect food sales, government agencies tend to phrase them in euphemisms" (p. S37). While this may

be politically expedient, it often leaves consumers little better off than they would be without the message.

International and domestic non-governmental organizations are sometimes better positioned to formulate clear goals and messages. Many NGOs are by nature focused on a subset of health concerns, and these groups are somewhat insulated from the matters that hinder government agencies from taking strong stances that may harm key constituencies. We have summarized some of these organizations' recent messages and programmes in Section II. Although NGOs can and will continue to supplement the informational role, government cannot rely solely on these disjointed messages to promote the social good. As seen in the relative success of the "five to ten" programme promoting fruit and vegetable consumption, health promotion initiatives are most effective if government agencies come out with credible and clear messages that reinforce (or at least do not contradict) what other trusted voices are saying.

A second way for government to bridge information gaps is to compel food producers to provide nutritional information on their products. As new concerns and diet-health linkages come to light, there will be calls to expand the labelling requirements currently in place. While it is crucial that additional regulations not be imposed without regard to their cost, government should be willing to enlarge the scope of these requirements. Although some companies and industries may resist such moves, others will embrace it. Labelling requirements provide an avenue for further product differentiation, and innovative companies will find it profitable to take advantage of this.

A related issue is the regulation of producers' health claims. On the one hand, allowing producers to advertise the beneficial effects of their products can help to achieve a healthier population. On the other hand is the concern that too many health claims will lead to consumers being swamped with useless and manipulative information (Nestle, 2002). In particular, when health claims are allowed about specific ingredients, the door is opened for manufacturers to put health claims on foods that most nutrition experts would not consider healthy. The challenge for government is two-fold. First, it must not allow health claims to be used as a marketing tool if the net effect is to decrease the public health. Second, it must proceed in ways that do not lessen the effectiveness of its own health promotion messages.

The tables in Section III provide ample evidence that industry will respond to health concerns through product development and marketing. This suggests that, for many issues, promoting and standardizing information is a viable alternative for process-specific requirements. For example, a joint program that develops a clear message about the health effects of trans-fats and implements

specific labelling requirements for their use may be as effective in promoting public health as the near-total ban currently being considered in Canada. Moreover, the informational route better allows for consumer choice and for the incorporation of new evidence on the health effects of trans-fat consumption. This being said, regulating processes is justified when the health effects are so great that no amount should be consumed, or when the informational barrier can not readily be overcome through labelling requirements.

Another set of tools being considered by governments around the world involves the increased use of consumption taxes to achieve health goals. Since consumers are responsive to price, these can be effective means of lowering the consumption of undesirable food items. At the same time, taxes involve an actual redistribution of income that makes all consumers worse off. One can also label “fat taxes” as regressive because these effects will be most deeply felt by low-income families. Potato chips and fast food meals are substantively different from cigarettes, in that the latter are addictive. In moderation, healthy individuals can still consume most snack foods without jeopardizing their health; however, a fat tax penalizes the person making that choice. An alternative way to achieve a healthier dietary mix would be to subsidize the consumption of foods considered to be healthier, but this is rarely done. Although such a programme would actually be progressive, in that the largest benefits would go to those with lower incomes, any “thin subsidy” would necessarily involve new government outlays that would have to be funded by taxpayers.

As noted in Section IV, we already make extensive use of indirect and direct subsidies, administered pricing, and regulated marketing to support some areas of agricultural production. There is also a wide variety of non-food-related policies that may affect dietary choice. Since these programs have been established in complete isolation from health policy, the net effect on public health has often been negative. This underscores the importance of inter-agency cooperation. The relevant linkages between food and health lie well beyond the purview of any one agency. This review highlights many areas in which current agricultural policy has unintended consequences or is in direct conflict with health goals. However, there is little empirical analysis of the impact of current Canadian agricultural policies on food choices or consumed nutrient levels. This is a fruitful area for further research. These issues can only be understood and resolved through close coordination between staff at Agriculture and Agri-Food Canada, Health Canada, and other pertinent agencies. This type of cooperation will also lead to more inclusive consideration of all relevant concerns. Those strategies that can be supported and adopted by many of the significant players (industry, NGOs, and governmental actors) will have the greatest chance of success.

Canada is well-suited to assume an international leadership role in promoting health and wellness through sensible food policy. It is a small, wealthy country with a strong and well-defined regulatory system. It also has a strong tradition of addressing a wide variety of health concerns in the public sphere. Since significant health costs are involved, better food policy is also a way for the federal government to assist provinces that are struggling with their health care costs. Although there will be costs involved in retooling our current policies, these will be mitigated somewhat by the benefits to Canada in becoming an exporter of healthy foods and healthy food policies.

Figure 12: There is a Balance to be Sought in Food-Related Public Policy (Cartoon Copyright 2004, Jim Borgmann, Cincinnati Enquirer)



Appendix A: Descriptions of Cited Canadian Non-Governmental Organizations

Canadian Cancer Society

The Canadian Cancer Society (CCS) is a national, community-based organization primarily comprised of volunteers whose mission is the eradication of cancer and the enhancement of the quality of life of people living with cancer. Tasks undertaken by the CCS are the following:

1. **Research.** CCS is the largest charitable funding source for cancer research in Canada. Its research dollars are allocated by the National Cancer Institute of Canada and allocated through a review process that seeks to ensure that funds are directed only to excellent cancer research across Canada.
2. **Advocacy.** CCS seeks to influence systemic change on tobacco, prevention, coordination of cancer control, research and research issues, and health reform.
3. **Prevention.** CCS attempts to provide Canadians with the information and help needed to make healthy lifestyle choices. Because prevention is about systemic or societal choices, CCS also attempts to influence public policy toward healthy choices.
4. **Information.** CCS also seeks to help individuals take control of their health with reliable information. Through its Cancer Information Service, www.cancer.ca, and a wide selection of publications, it offers information to help make good decisions about health.
5. **Support.** CCS offers individual or group support programs for caregivers, family, and friends of those diagnosed with cancer.

The Canadian Cancer Society has head offices in Toronto and Ottawa, and regional divisions for each province. It has approximately 200,000 volunteers, 550 paid staff, and (in 2003) total income of \$171 million. For the past decade, annual expenditures for public education have been about \$1.5 million.

Heart and Stroke Foundation of Canada

The mission of the Heart and Stroke Foundation of Canada (HSFC) is to improve the health of Canadians by preventing and reducing disability and death from heart disease and stroke through research, health promotion and advocacy. HSFC is a federation of 10 independent provincial foundations and one national foundation, led and supported by in excess of 250,000 volunteers. HSFC seeks to be the most reliable source of heart disease and stroke information, and is also the largest non-commercial source of funds for heart disease and stroke research in Canada.

1. **Health Promotion.** HSFC spent \$28 million on health promotion activities in 2003. Its programs focus on:
 - a. Promotion programs and resources to help people learn how to live healthier lives.
 - b. Promoting a heart healthy lifestyle. The newest addition to the HSFC's many healthy eating initiatives, Health Check™, is a food information program that helps consumers when they shop for healthy groceries.
 - c. The national Emergency Cardiac Care effort, sets the standards for cardio-pulmonary resuscitation (CPR) and automatic external defibrillation (AED) in Canada. Thousands of Canadians are trained by the Heart and Stroke Foundation every year.
 - d. Working with Canada's cardiovascular health community to provide the tools it needs to give Canadians excellent care. The Stroke Coalition, the Lifestyle Management of Hypertension in Canada, the Pharmacological Management of Hypertension in Canada ,

and the Heart Health Institute are examples of professional coalitions and resulting guidelines to which the HSFC contributes.

2. **Research.** HSFC is a leading funding source for heart and stroke research in Canada. It spent \$48 million on research grants in 2003. HSFC is also a partner with other groups, including active leadership in the Canadian Institutes for Health Research, the Research Issues and Options Working Group, Surveillance of Cardiovascular Disease in Canada, and the Canadian Heart Health Network in helping shape the future of health research in Canada.
3. **Advocacy.** HSFC engages in advocacy for healthy public policy. To this end, the HSFC seeks to influence issues that will impact the heart health of Canadians, including:
 - a. The review of Canadian food labelling legislation;
 - b. Smoking cessation legislation;
 - c. The ongoing review of charitable activity legislation in Canada;
 - d. Advocacy for better access to defibrillation in Canada;
 - e. HSFC is Canada's international cardiovascular health ambassador, working with similar organizations worldwide.

HSFC is located in Ottawa, and its total budget was \$113 million in 2003.

Canadian Cardiovascular Society

The Canadian Cardiovascular Society (CCS) is the national voice for cardiovascular physicians and scientists. The CCS's mission is to promote cardiovascular health and care through knowledge translation, including

- a. Dissemination of research;
- b. Encouragement of best practices;
- c. Professional development, and;
- d. Leadership in health policy.

The CCS's commitment is to:

- a. Optimal cardiovascular health of all Canadians;
- b. Making decisions based on credible science.

Partners and affiliates of the CCS include the Heart and Stroke Foundation of Canada (HSFC), and a number of other Canadian cardiovascular associations, including those that represent physician specialities, nurses, researchers, technicians, and other cardiovascular professionals. The CCS and its affiliates are active participants at the Canadian Cardiovascular Congress, a joint activity of the CCS and HSFC.

The Society also has strong ties with the Canadian Medical Association and is a specialty society of the Royal College of Physicians and Surgeons of Canada. Membership of the CCS presently is over 1200 medical professionals, representing cardiologists, cardiovascular surgeons, scientists, trainees in those fields, and other health professionals with an interest in cardiovascular health. The CCS holds an annual congress (Calgary in 2004), and its annual budget in the fiscal year ending March, 2003 was \$64,000.

Canadian Lipid Nurse Network

The Canadian Lipid Nurse Network (CLNN) is an independent, non-profit organization of nurses and other health care professionals who share an interest in lipids and dyslipidemia management. Members are involved in a variety of treatment areas, including lipids, diabetes, cardiac risk reduction, cardiac rehabilitation and other hospital-based and private clinical settings. The mission of the CLNN is professional development and patient care in lipid and dyslipidemia management. The CLNN seeks to enhance the assessment, treatment and outcomes of dyslipidemic patients by:

- a. Promoting standards for dyslipidemia management in Canada;
- b. Promoting education on lipid metabolism and dyslipidemia management for health care professionals; and
- c. Partnering in programs to raise awareness of dyslipidemia as a cardiovascular risk factor.

The CLNN has links to a number of heart and stroke-related organizations, including The Canadian Cardiovascular Society and the Heart and Stroke Foundation of Canada.

Canadian Diabetes Association

The Canadian Diabetes Association (CDA) is the largest non-governmental supporter of diabetes research, education, and advocacy. The CDA seeks to fill a role in the everyday lives of the over two million Canadians who live with diabetes. It does so through a variety of programs and services across Canada, offered through staff and volunteers:

1. **Consumer Literature.** CDA provides consumer information on many diabetes-related topics--meal planning, exercise, complications of diabetes, and nutrition. It can also provide complimentary customized information that will address specific diabetes-related issues.
2. **1-800-BANTING.** CDA has a toll-free information line to give diabetics access to knowledgeable personnel who will answer questions and provide referral to other resources.
3. **Information Sessions and Forums.** The CDA believes that the best way to manage diabetes is to become as familiar as possible with the disease and how to effectively deal with it. To help support this process, CDA facilitates a wide-range of activities for people affected by diabetes to learn about topics relevant to the disease. These include information sessions, forums, breakfast meetings, lunch time meetings with speakers, evening and weekend seminars, weekend retreats, puppet programs for schools and seminars focused on specific groups (e.g. seniors and youth). These sessions are usually delivered with the aid of experts, healthcare professionals, videos, or demonstrations.
4. **Resource Centres/Libraries.** CDA Information and Support Centres are located across Canada to provide information services to those affected by diabetes. Current locations are in Toronto, Winnipeg, and Vancouver. CDA also operates Canadian Diabetes Association stores in Halifax, Victoria, several cities in Ontario, and in PEI.
5. **Insurance For People Living With Diabetes.** CDA believes people living with diabetes should have access to reasonable and adequate insurance. To date, CDA has been successful in securing both travel and credit life insurance for its members.
6. **Summer Camps.** CDA organizes summer camps in every province in Canada. Camps are designed to give young people with Type 1 diabetes the opportunity to experience camp as all children do.
7. **Peer-Support Groups.** These give people who share a similar relationship to diabetes, an opportunity to regularly share and support each other in an unpressured environment, enabling them to successfully live with their disease.

8. **Displays.** CDA display boards provide information to the public on a variety of diabetes-related topics, letting the public know whom to turn to for information, resources, and programs on diabetes.
9. **Cooking Programs/Grocery Store Tours.**
10. **Aboriginal Programs and Services.**

Other CDA activities include Clothesline, an innovative program that consists of fundraising by collecting used clothing and reusable household items; the Healthy Work Initiative for Type 2 diabetes sufferers; the Diabetes Recycle Ink program for recycling used printer cartridges; Team Diabetes Canada; and other service offerings.

The CDA national office is located in Toronto, with regional offices in each province except Quebec. The 2003 budget of the CDA was \$65 million, and the largest expenditure item was education and services at \$18.6 million. Research grants in 2003 totalled \$5.5 million.

Canadian Association of Cardiac Rehabilitation

The Canadian Association of Cardiac Rehabilitation (CACR) is a multi-disciplinary association of professionals dedicated to providing leadership in clinical practice, research, and advocacy in cardiac disease prevention and rehabilitation for the enhancement and maintenance of cardiovascular health of Canadians.

Objectives of the Association are to:

- a. Act as a forum for the exchange of information within Canada and with other international Cardiac Rehabilitation Associations;
- b. Promote a better understanding of Cardiac Rehabilitation among other professional bodies, organizations, government agencies, and the public;
- c. Provide professional education through the organization, sponsorship and promotion of educational conferences, scientific meetings, and publications;
- d. Encourage and foster research in Cardiac Rehabilitation;
- e. Develop, promote, and establish guidelines for the practice of Cardiac Rehabilitation in Canada;
- f. Provide ways of enhancing career development for members and students in the Association.

The Strategic Plan of the CACR is to "be recognized as the national voice for cardiovascular disease prevention and rehabilitation". Specific directions for identified priorities and activities of CACR are detailed in the plan and are reviewed/revised by the Board on an annual basis as part of the budgeting process. Current activities of the CACR include a program directory to increase communication and networking amongst professionals within cardiac rehabilitation. It also publishes the Canadian Guidelines for Cardiac Rehabilitation and Cardiovascular Disease Prevention, a set of guidelines for daily use in the care and treatment of cardiovascular disease. It contains 164 recommendations for the treatment of patients with cardiovascular disease.

Calgary Cardiovascular Network

The Calgary Cardiovascular Network (CCN) is a local group whose mandate is to work together with all interested parties to prevent and control both heart disease and stroke. The network is made up of representatives of the medical, nursing, nutrition, psychological and fitness professions, community

and volunteer agencies, commodity groups, retailers, and education. CCN focuses on four strategic priorities:

- a. Coordination;
- b. Awareness;
- c. Advocacy; and
- d. Action.

The vision of CCN is to make healthy living a routine way of life. Initial focus has been on the prevention and control of high blood pressure and on the promotion of healthy eating and active living. Acknowledging that these and several other risk factors associated with cardiovascular disease development are also risk factors for other chronic diseases, CCN pursues expanded partnership development. Increasing linkages with stakeholders working to prevent other chronic diseases has the potential to increase community capacity in health promotion and risk factor prevention. The CCN does not have a consistent funding base. Funding is currently provided by donations from member organizations and interested parties as well as special project funding secured through successful grant applications. In-kind contributions from CCN members, most notably through committee and task teamwork are integral to the sustainability of the network.

Dietitians of Canada

Dietitians of Canada (DC) is the nation-wide voice of dietitians. DC brings the knowledge and skills of its members together to influence decisions that affect food, nutrition, and health. Formerly the Canadian Dietetic Association (1935-96), DC has set the standard for education of dietitians and professional dietetic practice. DC is governed by an eight member Board of Directors. All directors are members of the profession who have been nominated and elected by Members. Directors serve a term of two years.

Current priorities of DC are to provide leadership and support to its members to use their expertise in food and nutrition to promote health and well-being. As the voice of the profession, DC speaks out on food and nutrition matters important to the health and well-being of Canadians. DC has three principal vehicles for promoting and communicating dietetic research:

- a. **Canadian Foundation for Dietetic Research.** This is a charitable foundation established by DC in 1991 to provide grants for research by dietitians. These grants are awarded from a research fund made possible by donations received from corporations, individuals and other charitable foundations.
- b. **Canadian Journal of Dietetic Practice and Research.** The focus is research results and experience-sharing.
- c. **Canadian Inventory of Nutrition and Dietetic Associated Research.** This database provides a consolidated source of nutrition and dietetic research activity in Canada.

The national office of DC is located in Toronto, where its activities are directed by an elected board and a Chief Executive Officer.

National Institute of Nutrition

The National Institute of Nutrition (NIN) is an independent institute at the interface of nutrition science, consumers, government, and industry, NIN is in a unique position to foster effective

partnerships among those sectors. This multisectoral nature is reflected in the Institute's structure, collaborative research projects and communication programs.

Membership in NIN includes corporate members and government and university affiliates. NIN's Board of Trustees and advisory councils are structured to ensure the objectivity and credibility of the Institute. Those who guide NIN's actions reflect a wide range of expertise and span the country, ensuring that diverse perspectives are considered.

NIN is committed to ongoing collaborative consumer research. The Institute has published four Tracking Nutrition Trends surveys since 1990, providing a means to benchmark and monitor changing attitudes toward food and nutrition issues among Canadian consumers. Other studies have identified important consumer perspectives on such emerging issues as functional foods, nutrition labeling, health claims and voluntary labeling of foods for biotechnology. The insights gained from this research guide the actions of policy makers, health professionals, industry, and, ultimately, the consumer.

NIN's vision is to be the catalyst for advancing nutritional health of Canadians. It is the only national, multisectoral authoritative voice for evidence-based nutrition policy in Canada. NIN seeks to

- a. Play a catalytic role nutrition policy development and advocacy, and
- b. Define and strengthen NIN's role as a catalyst, partner or broker with other nutrition-related organizations.

Offices of NIN are located in Ottawa.

Appendix B: Websites Accessed

(All of the following were accessed between February and April 2004)

Canadian Organizations

Canadian Cancer Society

<http://www.cancer.ca>

Heart and Stroke Foundation of Canada

<http://www.heartandstroke.ca>

Canadian Produce Marketing Association

<http://www.cpma.ca>

Canadian Cardiovascular Society

<http://www.ccs.ca>

Canadian Lipid Nurse Network

<http://www.lipidnurse.ca>

Canadian Diabetes Association

<http://www.diabetes.ca>

Canadian Association of Cardiac Rehabilitation

<http://www.cacr.ca>

Canadian Institutes of Health Research

<http://www.cihr.ca>

National Institute of Nutrition

<http://www.nin.ca>

Dietitians of Canada

<http://www.dietitians.ca>

Food and Beverage Processing Companies in Canada

McCain Foods Limited

<http://www.mccain.com>

Maple Leaf Foods Inc.

<http://www.mapleleaf.com>

Saputo Inc.

<http://www.saputo.com>

Molson Inc.

<http://www.molson.com>

Nestle Canada

<http://www.nestle.ca>

Agropur Co-operative

<http://www.natrel.ca>

Schneider Corporation

<http://www.schneiderfoods.ca>

Unilever Canada

<http://www.unilever.ca>

Multinational Food and Beverage Companies

Kraft Foods

<http://www.kraft.com>

Nestle USA Inc.

<http://www.nestle.com>

ConAgra Inc.

<http://www.conagra.com>

Unilever

<http://www.unilever.com>

PepsiCo Inc.

<http://www.pepsico.com>

Tyson Foods

<http://www.tyson.com>

Cargill Inc.

<http://www.cargill.com>

The Coca-Cola Co.

<http://www.cocacola.com>

Mars Inc.

<http://www.mars.com>

Anheuser-Busch Inc.

<http://www.anheuser-busch.com>

Food Industry Trade Associations

Food and Consumer Products Manufacturers of Canada

<http://www.fcPMC.com>

Canadian Council of Grocery Distributors

<http://www.ccgD.ca>

Canadian Federation of Independent Grocers

<http://www.cfig.ca>

Canadian Produce Marketing Association

<http://www.cPMA.ca>

International Council of Grocery Manufacturers Associations

<http://www.icgMA.com>

Grocery Manufacturers of America

<http://www.gMAbrands.com>

Fast Food Companies Present in Canada

Wendy's

<http://www.wendys.com>

Taco Bell

<http://www.tacobell.com>

McDonald's

<http://www.mcdonalds.com>

Burger King

<http://www.burgerking.com>

KFC

<http://www.kfc.com>

Subway

<http://www.subway.com>

Pizza Hut

<http://www.pizzahut.com>

Domino's Pizza

<http://www.dominos.com>

Mr. SUB

<http://www.mrsub.ca>

Edo Japan

<http://www.edojapan.com>

The Great Canadian Bagel

<http://www.greatcanadianbagel.com>

Dairy Queen

<http://www.dairyqueen.com>

Arby's

<http://www.arbys.com>

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