



## **Traditional Foods: Are they Safe for First Nations Consumption?**

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## **Introduction**

This paper focuses on the critical issue of First Nations exposure to environmental contaminants through the consumption of traditional foods. It discusses the potential health risks and benefits to First Nation communities, as well as, other issues of concern with respect to the economic and socio-cultural aspects of traditional food systems. The Environmental Stewardship Unit (ESU) of the Assembly of First Nations (AFN) has reviewed relevant research on this subject and will provide an overview of the current situation in this paper.

There is a growing concern among First Nations regarding the presence of contaminants in their traditional foods and the health implications of consuming such foods. Fear and uncertainty among First Nations has led to a shift away from eating traditional foods to a change in eating more store-bought foods.

Although there has been a general declining trend in consumption, traditional foods continue to provide important nutritional benefits to many First Nations communities. First Nations must face the dilemma of weighing the socioeconomic, physical and cultural benefits of traditional food use against the risk of exposure to contaminants.

## **Traditional Foods Systems**

For centuries, First Nations in Canada used their knowledge of their environment and traditional food systems to survive off of the land. Traditional foods systems were fundamental to their livelihood, subsistent lifestyle, and health and well-being. First Nations traditional foods, also referred to as country foods, mainly consisted of animal and plant species that were harvested from the natural environment. They include foods such as wild meats, fish species, bird species, plants species, and berries. These foods were acquired by First Nations through traditional activities such as of hunting, fishing, and gathering throughout the different seasonal periods. These traditional harvesting activities also contributed to physical fitness and health, strong cultural identity and values, and their knowledge of the land, environment and way of life.

Today, many First Nations continue to engage in such traditional harvesting activities as a means of subsistence. One study documented the frequency of use of traditional food species among 122 adults from three Yukon First Nations. The results showed that adults consumed traditional foods on average 1.14 times per day. Moose, caribou and salmon remain extremely important in the contemporary diets of these Yukon First Nations people. (Wein, E.E., and M.R. Freeman, 1995:161)

The term “traditional food system” includes all of the food species that are available to a particular culture from local natural resources and the accepted patterns for their use



within that culture. This term also embraces an understanding of the socio-cultural meanings given to these foods, their acquisition, and their processing; the chemical composition of these foods; the way each food is used by age and gender groups within a selected culture; and the nutrition and health consequences of all of these factors for those who consume these foods”. (Kuhnlein, H.V., and H. M. Chan, 2000:596)

Variations in traditional food systems and diets among First Nations communities in Canada is the result of differences in geographical locations, the availability of food species, proximity and access to animal migration routes and plants species, and traditional hunting and fishing practices. There is an interest to further examine the differences in traditional food use among First Nations and determine whether they are reflected in differences in diet quality and nutrient intakes. (Receveur, O et al., 1997:2182) Regardless of these differences, Traditional foods provide social, economic, physical and cultural benefits to First Nations.

Economically, traditional foods are more affordable in comparison to the high costs of store bought foods, especially in northern and remote communities. Harvesting of foods also provided a means of economic livelihood through trading among other communities. With respect to physical benefits, traditional foods are rich in nutrients and provide a good source of the dietary needs for maintaining good health among First Nations. Large quantities of wild meats are found to contain a good source of nutrients such as protein, iron, zinc, copper, magnesium and phosphorus. (Receveur, O et al., 1997:2184) Caribou, moose or fish liver are also good sources of vitamin A.

Another aspect is the socio-cultural importance of the use of traditional foods. During traditional ceremonies, feasts, potlatches, and cultural events, there is a deep connection to one's to cultural identity and spirituality through the consuming traditional foods and the events leading up to it. Prior to eating, a plate of each traditional dish is made up and burned as an offering to the “great spirit” and ancestors who have passed on to the spirit world. “The symbolic value of consuming traditional food has become more important as a marker for [cultural] identity”. (Pars, T., and G. Mulvad, 2002:112) For generations, traditional ecological knowledge, including traditional food species, has been passed down to the younger generation through oral teachings, storytelling, and experiences on the land. Traditional food consumption is deeply rooted in the social and cultural elements of a First Nations' way of life. Many hold beliefs about “food healthfulness and spiritual provisioning, uses of food for its educational value, and place in the social fabric of community life”. (Kuhnlein, H.V., and H. M. Chan, 2000:617)

## **First Nations Health – Benefits of Consuming Traditional Foods**

Maintaining a diet of traditional foods yields many benefits to First Nations health and well-being. From a First Nations' perspective, the concept of health and well-being is viewed in a holistic approach including the social, physical, emotional, and spiritual aspects of one's life. All of these aspects are interrelated and continuously influence one another. Once harmony and balance is achieved among all aspect of one's life, then health and well-being is achieved. With respect to traditional food systems of First



Nations, there is a delicate balance among all living things in the natural environment. When shifted, it leads to changes in traditional foods systems, as is occurring at present, and impacts on the health of First Nation peoples and their communities.

A traditional diet of animal and plant species provides a significant source of energy, protein, calcium, iron, zinc, niacin, polyunsaturated fatty acids (omega 3 fatty acids) and is low in saturated fats. According to a dietary survey in the community of Fort Severn, Ontario, women who had inadequate intakes of a number of essential nutrients including iron, vitamin B6 and vitamin B12, all of which were significantly higher on the days when country food was consumed. (INAC, 2004:76) A traditional diet and active lifestyle can act as protective factors against chronic diseases such as diabetes, heart disease, cancer, and other health conditions.

In addition to nutritional health, the harvesting activities such as hunting, fishing, berry picking and plant harvests, contribute to increased physical activity and health. The consumption of traditional foods may also contribute to the other aspects of well-being through economic and socio-cultural activities. A traditional diet is not only relatively low in cost, but provides an economic base and livelihood for many First Nations, and leads to food security. It is also related to socio-cultural values and community closeness through feast, potlatches and ceremonies. This leads to good mental health in the development of ones cultural identity, self-esteem, and pride.

## **Impacts of Environmental Contaminants on Traditional Food Sources and Consumption**

Food safety presents special challenges to those First Nations peoples who continue to live off the land and consume traditional foods on a regular basis. First Nations traditional food systems are being impacted from a variety of stresses including contamination of lands, waters and the air by industrial pollution, hydroelectric operations, improper fuel storage and handling, poor sewage systems, aquaculture industry (fish farming), off-shore oil development and transportation, mining and forestry operations, agricultural run-off, long-range transport of airborne pollutants, and climate change. “Persistent contaminants are detected throughout northern ecosystems—in air, fresh water, seawater, snow, sediments, birds, fish, plants, and terrestrial and sea mammals. Pathways for delivery of contaminants into northern environments include atmospheric, marine, and freshwater/terrestrial routes”. (Kuhnlein, H.V. and H. M. Chan, 2000:600)

In First Nation environments, some of the pollutants of major concern include mercury, cadmium, arsenic, and lead. Additional environmental contaminants include dioxins, polychlorinated biphenyls (PCBs), dichlorodiphenyl-trichloroethane (DDT). Many of these contaminants can be found in soils and sediments, air, water, aquatic species, animal and plant species. Environmental contaminants are also transported to the northern First Nations communities by long-range atmospheric currents and will bio-accumulate and bio-magnify in the food chain. Recent research conducted by Grassy Narrows and Wabauskang First Nations on the Sediment and Crayfish Sampling revealed



that there was “elevated mercury in sediment and crayfish in the south basin of Ball Lake compared to the north basin, and no change in crayfish and sediment mercury in the past quarter of a century all suggest that the sediments in the south basin of Ball Lake continues to be a source of mercury to the food chain of Ball Lake”. (Simpson, L. 2005:4)

With the growing concern among First Nations regarding the presence of contaminants, many First Nations peoples have shifted away from consuming traditional foods due to unknown health implications. There is also concern that a decline in the consumption of traditional foods will result in reduced participation among First Nations in traditional harvesting activities, in particular, reduced opportunities available for their youth to learn and experience these practices. This could potentially result in a loss of culture and traditional ecological knowledge.

“Decreased consumption of traditional foods, accompanied by a reduction in resource harvesting activities, is also believed to be contributing to health issues among our peoples, such as diabetes and obesity. Therefore, the inability to rely on traditional foods has broad implications for our peoples: our customary law, languages, health and well-being, and the very sense we hold of ourselves as distinct cultural groups are being affected”. (AFN, 2005:3)

Climate change is another critical challenge facing First Nations in the 21<sup>st</sup> century. The impacts of climate change will be experienced much greater among First Nations than the non-Aboriginal population in Canada. There are potential impacts of climate change to portable drinking water, air quality, safety and access to traditional food resources, housing transportation and infrastructure, First Nations’ health, economic opportunities, traditional activities, traditional ecological knowledge, and the social and cultural elements of First Nations’ ways of life.

Although it remains uncertain of the extent of potential impacts and implications of climate change on traditional foods, there are noticeable effects on the temporal fluctuation in species distribution and availability, as well as, food quality. Climate change may result in the loss or decline in animal and plant species, the loss of medicines, and competition over food sources from the presence of new animal or insect species. Climate change will also affect the presence of environmental pollutants, long-range transport of industrial waste from lower latitudes, accumulation, and bio-magnification of contaminants in the marine food chain. Warmer temperatures will result in increased bacteria in waters causing an increase in water-borne diseases.

The unavailability of traditional foods resulting from the impacts of climate change or contaminants can also lead to food insecurity issues in some communities. “Food insecurity is undesirable in and of itself, but it is also a possible precursor to nutritional, health and developmental problems. Food insecurity may compromise psychosocial functioning among school-age children as well as their nutrition and health”. (INAC, 2004:73)

Contaminants in the environment can accumulate in food species, and in some cases, multiple contaminants can be present. “Once an organism in the food chain assimilates a contaminant, it can be subject to bioaccumulation or can facilitate transfer of the



contaminant to other organisms. Factors such as inertness of the chemical, solubility in lipid or water, and speciation for metals all influence bioaccumulation. In addition, the length of the food chain or the number of species it passes through before consumption by humans affects concentration of a contaminant in food through biomagnification—the successive increase in chemical concentration”. (Kuhnlein, H.V and H. M. Chan. 2000:600) Freshwater fish, marine fish and mammals are recognized as the primary sources of mercury contamination in traditional food systems. Land mammals such as caribou and moose have been associated with cadmium contamination.

“Because of lipid solubility and food chain accumulation in freshwater and marine environments, the most significant contributors of PCBs and other organochlorines to the traditional food systems of northern Indigenous peoples are fish, marine mammals, and, to a lesser extent, fish-eating birds. Indigenous peoples who consume a great deal of these food resources have been shown to have higher levels of organochlorines in blood and breast milk than do non-native people living in more urban environments”. (Kuhnlein, H.V. and H. M. Chan, 2000:607)

Some communities have had health advisories on certain traditional foods which provide a maximum limit on consumption. One example is the special fish advisory in the First Nation community of Akwesasne that indicated that an individual should eat no more than one meal per month of flesh or roe from the St. Lawrence River lake sturgeon due to detected levels of PCB’s. It also warned women of childbearing age and children under the age of 15 from eating any flesh or roe from these fish. (Fitzgerald EF. Et al., 1998)

## **Health Risks Posed Through Exposure to Contaminated Traditional Foods**

Consuming traditional foods that have been exposed to environmental contaminants may pose serious health risks to First Nations people, including newborns and the unborn fetus. Currently, there are no conclusive reports of the harmful effects among First Nations peoples resulting from consumption of traditional foods. However, evidence does show that human exposure to contaminants, at levels comparable to those found in traditional foods, may result in adverse health effects. Additional research is needed on the health implications of chronic exposure, through traditional food sources, to different levels of environmental contaminants.

“Environmental degradation affects the health and well-being of Aboriginal people in three ways. First, pollutants and contaminants, especially those originating from industrial development, have negative consequences for human health. Second, industrial contamination and disruption of wildlife habitat combine to reduce the supply and purity of traditional foods and herbal medicines. Finally, erosion of ways of life dependent on the purity of the land, water, flora and fauna constitutes an assault on Aboriginal mental and spiritual health”. (RCAP, Gathering Strength. 1996)

Factors such as age, gender, genetics, geographic location, and lifestyle, can influence risk. Children are more vulnerable than adults and are at an increased risk from exposure of contaminants present in traditional foods or breast milk due to their smaller body mass, immature systems, physiology and metabolism. “A child’s digestive system will often



absorb foods and associated contaminants more efficiently than that of an adult”. (Canadian Partnership for Children’s Health and Environment, CPCHE, 2005:23) There is also risk of potential harmful effects from infant exposures to PCB’s in breast milk linked to neuropsychological deficits among school-age children associated with prenatal, not postnatal exposure. (CPCHE, 2005:64) Other potential health impacts in children, which require further research, include developmental delays, and endocrine disruption.

A study was conducted to determine the relationship between the consumption of contaminated local fish and concentrations of total polychlorinated biphenyls (PCBs) and 68 PCB congeners in the milk of nursing Mohawk women residing near three hazardous waste sites. The results showed that the “estimated cumulative lifetime exposure from local fish consumption was significantly related to milk total PCB and to three congeners only among those Mohawks who gave birth from 1986 to 1989. The reduction in breast milk PCB concentrations parallels a corresponding decrease in local fish consumption and may be the result of the advisories that have been issued over the past decade recommending against the consumption of local fish by pregnant and nursing Mohawk women”. (Fitzgerald EF et al., 1998:164)

Other research on the citizens of the Grassy Narrows and Wabaseemoong First Nation in northwest Ontario found high levels of mercury contamination resulting from their close proximity to pulp mills and hydroelectric development. This community has been severely affected by methyl mercury poisoning, also known as Minamata disease, through the consumption of fish contaminated by pulp mill effluent. (AFN, 2005:7) Alarming, many First Nations across Canada are located near some type of industrial development which is significantly affecting their traditional food sources and overall health.

“To the First Nations whose traditional lands are located in the north, contaminants are a serious concern because of long-range transportation and accumulation issues. Global wind patterns and water currents transport pesticides, PCBs and other persistent organic pollutants from industrialized regions in the south to the north, where they persist far longer than they would in warmer climates. These contaminants may then bio-magnify in the food web, concentrating in the fatty tissue of many Arctic animals, particularly marine mammals, which are, in turn, consumed by First Nation peoples who rely on traditional foods. We are discovering that the food which for generations nourished us physically and spiritually, is now poisoning us”. (AFN, 2005:7)

First Nations face a serious dilemma in weighing the socio-cultural, economic and nutritional benefits of traditional food use against the potential health risks of exposure to contaminants from these foods.

### **Health Risks from Consuming Store Bought Foods**

Since the early arrival of Europeans, First Nations have been introduced to commercial foods such flour, refined sugar, oatmeal, lard and tea. These foods were foreign to First Nations digestive systems which were only accustomed to traditional, healthier foods.



Soon after, changes in subsistence activities of First Nations began to occur. Not only did they hunt and fish for subsistence, but also for trading purposes for these new foods.

There is a growing dependence among some First Nations communities on store-bought foods as a result of changes in their traditional subsistence patterns and activities. It is also the result of fear and uncertainty of the presence of contaminants in their traditional food sources and the potential health risks. Previous research done by Health Canada titled, *Examination of Traditional Food Consumption Patterns on the Basis of Community-Based Research Undertaken by Selected First Nations in Canada*, assessed the levels of wild game/fish and other country food consumption in ten First Nations communities in different regions in Canada. The purpose was to estimate the level of risk presented by environmental contaminants in country foods. The analysis of results suggests there was a decreasing reliance on traditional foods among First Nations on-reserve. (Tikhonov, C. and K. Lydon-Hassen)

The decline in traditional food use has resulted in a change in First Nations dietary patterns. In general, consumption of more store bought foods means an increase in energy intake, carbohydrates, fat and saturated fats, and a decrease in essential nutrients and minerals derived from traditional foods. This change will have major consequences on the health of First Nations peoples. It can lead to an increased risk of obesity, type 2 diabetes, high blood pressure, heart disease, colorectal cancer, and other chronic diseases. “Many Aboriginal people consider diabetes an example of “white man’s illness,” a new, introduced disease similar to smallpox and tuberculosis in the past. The adoption of modern foods and the decline of hunting and fishing are widely believed to be the underlying causes of the epidemic”. (T. Kue Young, 2000:565)

With respect to First Nations children, one would assume that they are genetically predisposed to consume a diet of traditional foods and are not biologically meant to consume a variety of processed foods and commercial foods. With the increased use in store-bought foods, the health of First Nations children is at risk of suffering from health conditions including, obesity, diabetes, and high blood pressure. There are also other factors to take into consideration such as reduced physical activity, loss of socio-cultural activities in harvesting of foods, and lack of information on nutritional diets.

There is a need to “better understand the process of dietary change in relation to ecological, economic and cultural factors responsible for loss of traditional systems [in First Nations] and potential implications such as loss of culture-specific knowledge, increase in sedentary lifestyle and diet-related chronic health conditions”. (Receveur, O. et al., 1997:2185)

## **Considerations**

The following are some considerations in order to better understand and address some of the issues presented in this paper on traditional food safety and contamination. There is a need to:



- Have Industrial controls to reduce persistent pollutants emissions into the environment.
- Secure resources for funding research initiatives to better understand the risks and impacts on First Nations health.
- Assess levels of contaminants in traditional food sources.
- Assess levels of consumption of traditional foods in First Nations communities.
- Develop First Nations approach and models of environmental risk assessments, evaluations, and management strategies which consider the benefits and risks of consuming traditional foods.
- Develop adaptation strategies in relation to climate change impacts.
- Develop community advisories on the levels of traditional food species that are safe and unsafe for consumption.

A research gap exists concerning the perspectives held by First Nation peoples on the benefits and risks of traditional food use. Additional research is also needed to assess the levels of contaminants present in traditional food sources to better understand the true risks to First Nations health.

## Conclusion

There are multiple benefits and contaminant risks from the consumption of traditional foods by First Nations peoples, and weighing these considerations against each other is complex. Some of the benefits of traditional foods used by First Nations peoples presented in this paper include the availability of key essential nutrients, physical activity during harvesting, lower food costs, the prevention of chronic disease by consumption of more nutritious food, and multiple socio-cultural values that contribute to mental health and cultural morale. The impacts of consuming more store bought foods on patterns of dietary change and frequency can have major consequences on the health of First Nations and could potentially lead to higher incidence of chronic diseases.

“Although the Elders felt that their environment is contaminated, and that no level of contamination is safe, they still felt that eating traditional foods is important because it is the way of life giving to them from their Creator. They would like the mercury contamination cleaned up. They would like the clear cutting, the spraying and the other forms of industrial development on their territory to stop. They would like to strengthen traditional food ways, traditional economies as mechanisms for promoting healthy individuals and a healthy community”. (Simpson, L, and J. Dasilva. 2005:4)

First Nations will need to consider the nutritional, socio-cultural, economic, and health effects of using and not using traditional food. Ultimately, traditional foods systems of First Nations still remain the best food that is available to them.





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