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ENVIRONMENT AND HEALTH RISK COMMUNICATION PATHWAYS IN ABORIGINAL COMMUNITIES: LEARNING FROM THE CASE OF FOODWEB CONTAMINANTS AND NUTRITION ISSUES WITH YOUNG INUIT WOMEN IN NUNATSIAVUT

by

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Submitted in partial fulfillment of the requirements
for the degree of Master of Environmental Studies

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ABSTRACT

Inuit are exposed to both risks (e.g. environmental contaminants) and benefits (nutritional, social, cultural) through their consumption of wild foods. This project explored the research question: What are the key factors that influence the communication of environmental health risk messages with identified at-risk populations in Aboriginal communities?

This question was investigated through a case study project conducted on the issue of foodweb contaminants in wild food resources, and aspects of the communication process with women of childbearing age in one Inuit community in the Canadian North. The project used key informant interviews, focus groups and document review in the community of Nain, Nunatsiavut (Labrador).

The focus groups confirmed that young women use a variety of formal and informal pathways to receive information about health issues and that little of the material they receive seems relevant to their personal context. The research also found that this target group was generally not concerned about health effects from contaminants but that other nutrition issues (e.g. food security) were more important to them. The research results have implications for effective communication with at-risk target groups in Aboriginal community context.

LIST OF ABBREVIATIONS USED

AMAP - Arctic Monitoring and Assessment Programme

CACAR – Canadian Arctic Contaminants Assessment Report

HBC – Hudson's Bay Company

INAC – Indian and Northern Affairs Canada

ITK - Inuit Tapiriit Kanatami

LIA - Labrador Inuit Association

LIHC - Labrador Inuit Health Commission

NCP – Northern Contaminants Programme

NG - Nunatsiavut Government

NRI - Nunavut Research Institute

POPs – Persistent Organic Pollutants

VBNC – Voisey's Bay Nickel Company

WCBA - Women of childbearing age

GLOSSARY

Arctic – circumpolar region of northern hemisphere; above or close to Arctic Circle

Inuit Nunaat, Inuit Nunangat - At the June 10, 2009 Inuit Tapiriit Kanatami Annual General Meeting in Nain, Nunatsiavut, the Board of Directors adopted a change in terminology from 'Inuit Nunaat' to 'Inuit Nunangat'. ITK states: "'Inuit Nunaat' is a Greenlandic term that describes land but does not include water or ice. The term 'Inuit Nunangat' is a Canadian Inuktitut term that includes land, water, and ice. As Canadian Inuit consider the land, water, and ice, of our homeland to be integral to our culture and our way of life it was felt that 'Inuit Nunangat' is a more inclusive and appropriate term to use when describing our lands" (ITK, 2009b).

Inuktitut – common term for Inuit language, refers to all dialects, including syllabics

Inuttitut – Nunatsiavut dialect of Inuit language

Kablunângajuk (plural = **Kablunângajuit**) - person of Inuit ancestry; mixed Inuit and non-Inuit or non-Inuit ancestry who live in Nunatsiavut and who are entitled to rights under the Land Claims Agreement due to (ancestral) settlement in region prior to 1940 or a descendant of the above born before 30 November 1990.

North – circumpolar region of northern hemisphere and / or region where Inuit and other northern aboriginal people live ('North' is not all above Arctic Circle)

Nunatsiavut – Inuit Land Claim area of Labrador, means "our beautiful land" in Inuttitut

Nunatsiavummiut - the people of the region of Nunatsiavut

OKâlaKatiget Society - in English means "People who talk or communicate with each other", was incorporated in 1982. Stationed in Nain, Labrador, the non-profit Society provides a regional, native communication service for the people on the North Coast and the Lake Melville region of Labrador (Nunatsiavut). "People have come to rely on the Society for information and entertainment via radio and television. A primary part of their mandate is to preserve and promote the language and culture of the Inuit within the region" (The OKâlaKatiget Society, 2006).

Wildfood – a term used by Nunatsiavummiut for food that is hunted, fished or harvested from the wild and not commercially-produced / store-bought. (Also called country food, traditional food, customary food).

Women of childbearing age - women who are 13-45 years of age, the span of years when a woman is most likely to become pregnant and bear children

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Thank you: The people of Nain in Nunatsiavut...for inspiring my thesis interests back in 1999 when I first visited, and for their patient support while I carried out my research there). Folks in the Labrador Inuit Association office; The Quebec-Labrador Foundation (USA / Canada) for the original opportunity, consistent support and eventual encouragement to take NGO summer work in Nain into the academic realm; Family, some of whom were not yet born when I started this but who are now talking more sense than I am...thanks for listening and waiting and knowing I'd get there eventually. ["We always knew she'd turn out alright" (Elaine Brummer Spellman 1903-1991)]; My committee co-supervisors Ray Côté and Chris Furgal for their abundant patience, good guidance and taking the risk of betting on a slow horse (I am changing my name to Seabiscuit); committee member Fran Williams of Nain for giving me perspectives I could not have had without her input and for allowing me to call her an elder; Heather Castleden, external examiner; Fay Cohen for her ready and generous mentorship from my first day at Dalhousie to my last (and for valuing my penmanship, resulting in a needed side-career for me); School for Resource and Environmental Studies faculty and staff; Dalhousie ethics committee; Faculty of Graduate Studies; Margaret Wood, stalwart advisor at International Student and Exchange Services, SRES students over the years who shared the journey in one way or another; Friends in Halifax, especially Gillian for the countless cups of tea and needed creative boosts, and the Treehouse Gang and our times on the cushions and at the Old Red Schoolhouse, and Lisa for her 24/7 on-call formatting expertise and more; Northern Contaminants Program (of Indian and Northern Affairs Canada) and LIA for financial support of a stipend during the research phase of this thesis; Eric Loring for guidance during the development phase of the research; DSU and DAGS for support to attend conferences and symposia; Pamela Orr, president of the International Union for Circumpolar Health (IUCH) for her determination to get me to International Congress on Circumpolar Health (ICCH14) to present my thesis results, with funding from the International Polar Year (IPY) Arctic Human Health Initiative (via Alan Parkinson and the Southcentral Foundation of Alaska) and with further support from NCP / CIHR via Chris Furgal. (The IPY only occurs every 50 years, so this was a once-in-a lifetime opportunity for me); The writings of Rachel Carson, David Suzuki, David Attenborough, Sherman Alexie, Thomas King, Naomi Shihab Nye, Billy Collins, Hugh Brody and the many creative others who have opened my eyes and enlarged my view; Isuma-Igloolik and their films (Atanarjuat; the Journals of Knud Rasmussen) for keeping me connected to Inuit worldviews even from afar...(issuma : "thoughts and ideas"...always guiding me) ; AWK, you know why and how much; And most especially, my heartfelt thanks to anyone who, in the last 7 years: fed me, made grass nests with me at Point Pleasant Park, climbed trees with me, or made me laugh.

Nakkumek!

CHAPTER 1: INTRODUCTION

"...it will take many years until levels decrease and in the short-term dietary advice may also be prudent. Such advice has to recognize the importance of Traditional foods for people's health and well-being and to weigh risks against benefit. The advice has to be developed locally and must take into account the needs of the communities involved."
(Arctic Monitoring and Assessment Program [AMAP], 2002, p. 96)

1.1. INTRODUCTION / RATIONALE

A major objective of this research is to assist in the development of strategic communication that focuses on sensitive groups, those most 'at-risk', related to the issue of contaminants and wild foods. This thesis explores risk communication theory and uses a case study to examine the setting in which such theory is applied. Ultimately, the study findings may inform efforts to engage the appropriate individuals on this subject (or other public health issues for this target group) and to deliver and discuss environmental health information with them in effective ways.

Based on our current understanding, it is clear that humans (in fact, all mammals) are at greatest risk of health impacts from exposure to persistent chemicals when in prenatal and neonatal stages. That means that the population of special concern is women of childbearing age and young mothers carrying the developing foetus (Lawn & Harvey, 2001; AMAP, 2003; Nunavik Regional Board of Health & Social Services, 2003; Van Oostdam et al., 2003). A primary concern among health educators and environmental health officials has been how to begin informing young women about these issues so that their exposure to these contaminants can be reduced, if necessary, and early enough to positively influence their health and the health of their babies. This issue is even of greater importance in those regions of the world where populations are exposed to levels of environmental contaminants approaching or exceeding levels deemed "safe" by health officials.

Nunatsiavummiut ('people of Nunatsiavut', the Inuit land claim region of Labrador, see Chapter 2) are, by their own assertion, "sustained by the animals, birds, plants and fish of the region" (Labrador Inuit Association [LIA], 2003). Research has shown that

Nunatsiavummiut are exposed to contaminants in their traditional diet of wild foods (sea and land mammals, birds and fish) (AMAP, 2003; Indian and Northern Affairs Canada [INAC], 2003a). Research reported in the Canadian Arctic Contaminants Assessment Report II (the Northern Contaminants Program research results publication) indicates that contaminants are present in these food sources due to contamination of the environment (Bidleman et al., 2003). This occurs primarily through short range and long range atmospheric pollution (AMAP 2003; INAC, 2003a). Chemicals and compounds related to the manufacture, use and disposal (including accidental releases) of various industrial and agricultural activities (e.g. pesticides, PCBs) are now found in all areas of the globe. These substances travel via air and ocean currents to the earth's polar regions and settle out (e.g. via precipitation and deposition) in these cool areas. There are also local sources of contaminants in the North related to a wide range of activities including mining and the operation of military sites, community landfills and waste incineration. Regardless of origin, once within the Arctic, contaminants enter the local ecosystem and food web via ingestion by a variety of animals, magnifying up the food chain and then eventually being consumed by humans feeding on top predator species (Van Oostdam et al., 1999; AMAP 2003; INAC, 2003a).

The levels of contaminants in these foods in Nunatsiavut and the potential effects they may have on residents of the coastal communities are of concern to Nunatsiavummiut. As such, these concerns threaten confidence in the safety and value of their wild food sources and thus their sense of food security. There are numerous, and often subtle, social and cultural benefits and risks associated with a traditional diet and related activities (hunting, preparation, and consumption), and these are important to the fabric of community life (Kinloch et al., 1992; Condon et al., 1995; Kunhlein et al., 2000).

Due to the relationship between Inuit and wild harvested food, it is vital that the dissemination and discussion of information about the risks of potential contaminant exposure through this diet be accurate, while taking into account the risks of raising fears or creating confusion in the community and the impacts this confusion may have on food choice behaviour (Furgal et al., 2005). There is an increasing urgency to learn about

communications on these issues as we have seen the results and impacts of poor risk communication in other regions of the North and are beginning to understand the impacts this may have on food choice behaviour and, subsequently, health (Myers & Furgal, 2006). Of greatest concern is that these impacts are not always of a positive nature, with more market food consumption often resulting in higher consumption of certain fats, and sugar and simultaneously less of the important, health-protective micronutrients found in wildfoods (Kinloch et al., 1992; Bjerregaard & Young, 1998; Kunhlein et al., 2000).

It is argued that the mitigation of the contaminants problem in the North must come simultaneously from several approaches. It is imperative that it includes global policy change and actions that reduce the global use of persistent organic pollutants (POPs) and other contaminants of concern. In addition there must be rapid implementation of appropriate local risk management and communication strategies, where required, that minimize exposure to these contaminants while maintaining the beneficial contributions these foods make to individual and community health and well-being (Downie & Fenge, 2003).

There have now been more than two decades of research and communication on the environmental contaminants issue in the Canadian North. It is important that research be conducted on such things as issues related to message comprehension and behavioural responses to determine whether the information is being used in a way that helps to mitigate the risk of exposure without compromising the cultural, nutritional and social value of a diet rich in traditional foods. Further, it is important to identify the challenges in this communication process and address them via appropriate and culturally sensitive methods. Although some research has been carried out on diet-related behaviours in the North (e.g. Dewailly et al., 1992; INAC, 2003a), less examination of the perception and behaviours in relationship to environmental health-risks has been undertaken (Myers and Furgal., 2006). This thesis research is intended to help put into context the reaction to potential or perceived country food related risks and to learn about the factors influencing various aspects of the communications process for key target audiences in northern Aboriginal communities.

This research draws on the ongoing commitment by several organizations to carry out and communicate research results and learn about community concerns and perspectives regarding this issue through various two-way communication efforts with residents along the Labrador Coast. As such, it was part of an evolving partnership between the Labrador Inuit Association (LIA), Inuit Tapiriit Kanatami (ITK), Indian and Northern Affairs Canada (INAC) and researchers at the Nasivvik Centre for Inuit Health and Changing Environments (at Laval University). An objective of the Northern Contaminants Program (NCP) of INAC is "to reduce or, wherever possible, eliminate contaminants in traditionally harvested foods while providing information that assists informed decision-making by individuals and communities in their food use" (INAC, 2003b). At the time of this research, the Northern Contaminants Program had been working with the LIA for nearly 10 years to gather and communicate contaminants-related data in a way that is meaningful to the people of the region.

This research is intended to contribute to our knowledge of the current challenges faced in communicating on contaminants and health, and how to address some of them in the context of communicating complex, sensitive environmental health issues with Inuit communities. Although this thesis focuses on a target group of people considered "most at risk" from potential health effects of contaminants exposure, promoting healthful diet choices and behaviours is something that need not be limited to this target group. It is expected that the results presented in this thesis will be of interest and applicable not only to Inuit Nunangat (Inuit homeland in Canada), but also to other Inuit and Aboriginal groups around the circumpolar North as well as communities in other geographically remote or isolated locations around the world who are striving to improve health communication and outcomes.

I was inspired to do this study following on my previous work experience in Nunatsiavut; and found an opportunity to do academic research, supported by the community and with potential applicable use to the people there. It is my hope that this research is testament to both my intentions and the resilience of Nunatsiavummiut.

1.2. TERMINOLOGY USED IN THESIS

In order to clarify the plethora of semi-interchangeable terms that can be used in reference to the region in which this study was carried out, this section will give an overview of the terminology used in this thesis. If necessary, while reading the thesis, one can refer back to the glossary and acronyms for clarification.

Some of the terminology used in this thesis may not be in common usage or may be otherwise unfamiliar to the readers. In addition, many of the words used to refer to the Inuit regions and the people of these regions are used incorrectly in the media and there is some confusion around the names of these 'new' parts of Canada. The reason why terminology is a particular issue in this thesis is because the names and responsibilities of some important political and jurisdictional agencies in the study region have changed since the start of this research.

The study was initiated in 2004 in what was then called Labrador, sometimes 'northcoast Labrador', part of the province of Newfoundland & Labrador. The region is predominantly Inuit and had started negotiations towards a Land Claims Agreement in 1971. The thesis was started after the Agreement-in-Principle (AIP) was signed (2001) between the federal government and the Labrador Inuit but before the Land Claims Agreement was completed. When the ethics agreement was granted for this research and during the field season (2005), the research was conducted with the approval of the then Labrador Inuit Association (LIA). Since 2005, when the designated portion of Labrador involved in the Land Claims Agreement became known as 'Nunatsiavut', all such LIA responsibilities became part of the Nunatsiavut Government's mandate. The people who dwell in Nunatsiavut are called Nunatsiavummiut. The terms Nunatsiavut and Nunatsiavummiut will be used throughout the thesis to refer to the region in which the case study took place, and the people that dwell there. To see the region included in the land claim, please see Figure 1: "Map of Nunatsiavut Land Claim Area".

The Land Claims Agreement confirms and codifies the understanding between the federal government of Canada and Nunatsiavummiut that "Inuit claim Aboriginal rights

in and to the Labrador Inuit Land Claim Area based on their traditional and current use and occupancy of the lands, waters and sea ice of the Labrador Inuit Land Claim Area in accordance with their own customs and traditions" (*Labrador Inuit Land Claims Agreement*, Parties and Preamble, 2004, p.1).

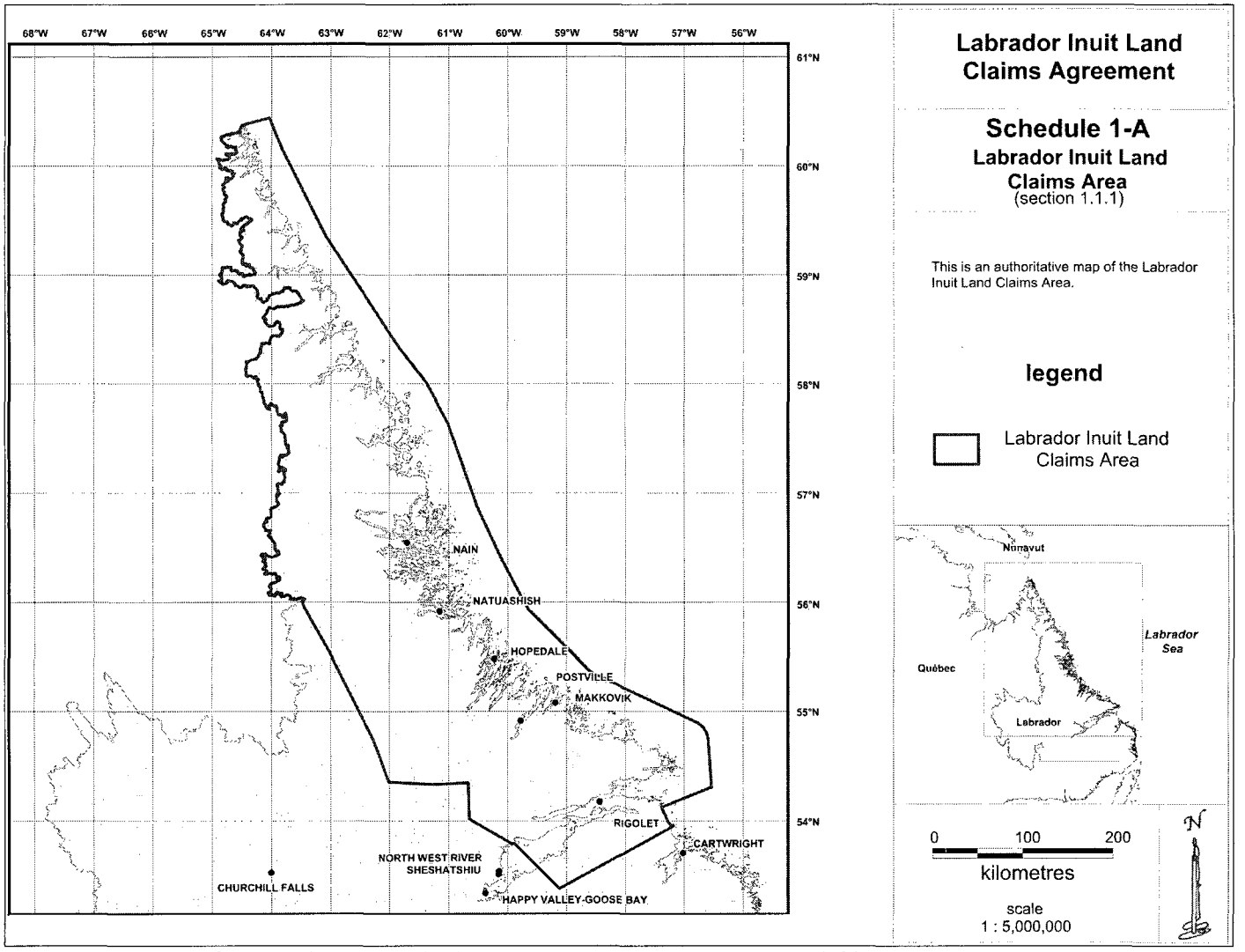

Figure 1: Map of Nunatsiavut Land Claim Area (*Labrador Inuit Land Claims Agreement*, 2004)

Inuit in Canada refer to the language they speak as 'Inuit language', previously (and incorrectly) lumped together and simply called 'Inuktitut'. Inuit language has significant regional differences across Inuit Nunangat, the 'Inuit Homeland in Canada' (Inuit Tapiriit Kanatami [ITK], 2009b); the Nunatsiavut regional dialect is currently referred to as Inuttitut, and for the purpose of this thesis this is the correct term.

It is hoped that explaining and using current terminology will assist the readers of this thesis in having the preferred terms as part of their understanding and vocabulary. A more comprehensive description of the case study region and community is presented in Chapter 3.

1.3. RESEARCH PURPOSE AND QUESTIONS

The thesis focuses on the research question: What are the key factors that influence the communication of environmental health risk messages with identified at-risk populations in Aboriginal communities? This question is investigated through a case study project conducted on the issue of foodweb contaminants in wild food resources, and the communication process (message formulation, delivery, reception, comprehension, etc.) with women of childbearing age in one Inuit community in the Canadian North.

Extensive research has been carried out on many aspects of health risk communication and some of this research looked at risk communication with Aboriginal communities (Usher et al., 1995; Myers & Furgal, 2006). An aspect of this body of research that has not been sufficiently considered is the use of communication pathways by target groups (of those considered to be at greatest risk from a specific potential harm, e.g. environmental contaminants that have effects on development). There still appears to be a gap in the knowledge around 'how' rather than 'what' people know and this is particularly evident in the literature on this topic in the Canadian North. In this study the elements in risk communication were examined, through the lens of communication pathways: "where does the target group (of women of childbearing age) get the information they 'use' that informs what they 'know' about contaminants, nutrition, and health?"

The primary line of investigation was related to information access and delivery: where do women of childbearing age access information on health, nutrition, environmental contaminants. Also of interest is was whether or not the potential existence of environmental contaminants in their food sources was in fact an issue of concern, and if so, what was known and done about it by community members. These questions were directed at both the (potential) providers (educators, health professionals) and the (target group) recipients of the information, women of childbearing age.

The topics discussed in the thesis include personal health risk perception, nutritional and health knowledge and awareness (i.e. perception of benefits of various foods, understanding of contaminants, and prenatal nutrition information), and preference for information reception (communication pathways -including mapping current and possible communication networks). The topics of northern contaminants, wildfood, Inuit diet / nutrition, women of childbearing age, risk communication, and health issues are all discussed in the chapters of this thesis.

1.4. THESIS OUTLINE

This thesis is comprised of seven chapters. Throughout the thesis there are tables and figures that illustrate specific relevant points and at the end of the thesis are a number of appendices to enhance the reader's understanding of the entire research process. It includes required forms and documents, the complete data analysis tables and other supporting documents.

In Chapter 2, the Literature Review & Theoretical Context, which comprises a review of the literature on risk communication theory and the background issues for the case study used in the research is presented. It gives an overview of the issue of environmental contaminants in the north. The study area is discussed in Chapter 3, going from a macro-view (the Arctic) to a micro-view, the Nunatsiavut region and specific community where the field research occurred. The way in which the study was designed and carried out (including the ethical considerations of research conducted in Inuit communities) is described in Chapter 4, Research Methodology. Chapter 5 presents the data analysis

process is to be found and the summary of the research findings. In Chapter 6 the results are discussed and interpreted in reference to the literature on this topic and conclusions (key findings, study limitations, etc.) and recommendations for future research are presented in Chapter 7.

CHAPTER 2: LITERATURE REVIEW & THEORETICAL CONTEXT

"Risk decisions are not about risks alone. One can accept large risks if they bring large benefits and reject small risks if they bring no good." (Fischhoff, 1995, p. 141)

"Risk communications are conceptualized as being embedded and shaped within settings that vary in terms of salient cultural themes, values, norms and other sociocultural features." (Vaughn, 1995, p. 171)

2.1. INTRODUCTION

This comprehensive literature review surveyed pertinent primary and grey literature dealing with the subjects of contaminants in the Arctic region, risk theory and communication and health promotion and education. It included review of past contaminants communication (past projects and activities; information on lessons learned). In addition, literature about risk communication and methods for engaging and educating target audiences on sensitive health issues such as contaminants in wildfoods, health and nutrition information pertaining specifically to women of childbearing age was reviewed. The literature review provided a basis of understanding for this research and yielded themes that supported a conceptual framework to analyze communication with the target audience on environment and health issues.

A review of risk communication theory literature was carried out in order to determine what elements need to be present for rigorous and 'effective' risk communication. For example, the limited evidence of formal evaluation of the contaminants communication activities in the North helped dictate the objectives of this thesis. This had been identified as a gap in the current research in environmental contaminants communication in the region (Usher, et al., 1995; Furgal et al., 2003).

What then, is risk communication? Powell & Leiss (1997a) explain that "risk communication is the process of exchanges about how best to assess and manage risks among academics, regulatory practitioners, interest groups, and the general public" (p. 33). Risk itself is the probability of harm (in any given situation), and "this probability is determined by two factors: (a) the nature of the hazard and (b) the extent of anyone's

exposure to the hazard. The product of the two factors adds up to the overall risk." (Powell & Leiss, 1997a, p. 33). The actual phrase 'risk communication' arose in the 1980s out of a growing interest in risk perception, which is how the public perceives information about potential harms. Public perspective is based on their understanding of harm to individuals, their fears of some specific ways of falling ill, and many other factors (Powell & Leiss, 1997b).

According to Powell & Leiss (1997a), risk communication has had three historical phases. Each phase builds on the previous phase and seems to be an attempt to deconstruct and demystify the errors and failures of previous risk communication activities. The legacy of phase one (about 1975-1984) is an emphasis on quantification of risk estimates and the goal of making regulatory decisions and public concerns revolve around these data. Phase two (1985-1994) brought into a focus on credible sources, message clarity and on 'audience' needs. The idea of the audience's 'perceived reality' and the importance of an organization's commitment and competence are key to building the ever-sought-after element of trust. Phase three (since 1995) is all about emphasis on 'social context' (Powell & Leiss, 1997a). This thesis is set within the context of where we are going in the third phase and beyond.

The following three sections outline three primary aspects of risk communication as they apply to shaping this thesis: (1) risk communication and human nature, (2) trust in risk communication, and (3) risk perception and context. These are followed by a literature review of environmental contaminants in the Northern context and Northern contaminants and risk communication challenges.

2.2. RISK COMMUNICATION THEORY IN THE LITERATURE

It is important to recall the full meaning of 'health' when framing the discussion of health risk communication. The World Health Organization definition of health is "a state of complete, physical, mental and social well-being and not merely the absence of disease or infirmity" and as "a positive concept emphasizing social and personal resources, as well as physical capacity" (cited in Wheatley, 1993, p. 1). This broad and holistic view of

what comprises health can shed some light on the complexity of communication around risks or harms posed to health.

Prior to the 1990s, risk communication on contaminants was generally in the form of health advisories and media messages. This was not unusual in public health at the time, but since then the evolution of thinking on risk management has led to seeing risk communication as an interactive process of information and opinion exchange (Lundgren & McMakin, 1998). This process of information exchange is, after all, 'about how to best assess and manage risks' and as such should include academics, regulatory practitioners, interest groups and the general public (Fischhoff, 1985).

The public wants to know "will my children be safe?" while scientists discuss parts per billion and complicated chemical names. Both are "legitimate expressions of our attempts to deal with risks as we go about our daily business" (Powell & Leiss, 1997a, p. 28) and the gap cannot be closed if "fundamentally different values and assumptions" frame the risk (Powell & Leiss, 1997a, p. 31).

The concept and understanding of risk is inherently a social construct (Johnson & Covello, 1987; Vaughn, 1995). "Risk is a complex phenomenon that involves both biophysical attributes and social dimensions" and despite the evidence for this, current assessment and management around these aspects of risk "fail to consider (risk) in its full complexity and its social context" (Kasperson et al., 1988, p. 178). Perhaps to an even greater extent communication around these has failed in this way.

As we move through understanding the social dimensions of risk communication we see that "at the level of social discourse the gradual spread of good risk communication practices might be expected over time to do the following: (a) nurture a facility for interpreting risk numbers, including the meaning of risk estimates and the uncertainties associated with them; (b) help people put the whole assortment of risks affecting them into a broad framework (relative risk, comparative risk); (c) build institutional structures

for arriving at a consensus on risk management options, and for allocating risk reduction resources effectively" (Powell & Leiss (1997a, p. 30).

It is likely that the problems encountered in hazard management are too broad to be solved by any one discipline (Fischhoff et al., 1979), and a possible improved scenario is to apply both scientific and lay approaches to at least avoid getting it wrong. Finally, risk communication failures matter because they carry costs (economic and social), usually stemming from what happens when a communication 'vacuum' occurs, allowing a situation to develop (e.g. amplified fears or confusion) that might have been avoided (Powell & Leiss, 1997b).

2.2.1. RISK COMUNICATION AND HUMAN NATURE

Put simply, people want to know 'what risks are worth worrying about and what risks should be put out of mind?' (Powell & Leiss, 1997a). Although health risk communication is inherently complex, the recipients needs are as simple as that. "About the hazard, one needs to know (for example) if it is great or small, if it is mitigable or something people must learn to live with, if it is the sort of hazard people tend to exaggerate or ignore" (Weinstein & Sandman, 1993, p. 113).

One of the difficulties in risk communication has been human nature: people simplify, and furthermore, once their minds are made up, it is hard to change their opinions (Fischhoff, 1985). "People respond to the hazards they perceive" (Slovic et al., 1981, p. 17). People have all kinds of biases for judging some risks to be greater than others and for accepting the risks involved with the 'voluntariness' of some activities (driving in motor vehicles, tobacco use vs. an occupational or environmental exposure to chemicals) (Fischhoff et al, 1979; Slovic et al., 1980; Powell & Leiss, 1997b). Because risk management (and the communication relating to it) requires the use of resources and making trade-offs between costs and benefits', it involves conflicts (Fischhoff, 1985).

Kasperson's term 'social amplification of risk' means that risk is a threat of harm to people's health but also to other qualities people value such as 'community or political

freedom', and as such the experience of risk is simultaneously an experience of (potential) personal harm coupled with the manner by which people and institutions process and interpret these threats (Kasperson, 1986; Kasperson et al., 1988), and I would also add, respond to them. People's response to whatever their interpretation and subsequent perception is, is of great importance as well, since the goal of risk communication is to reduce exposure to harm. Without knowing this, it is difficult to measure the effectiveness of a communication strategy.

Another basic human response that complicates the communication process is that confusion leads to shortcuts (in understanding or applying information). Powell & Leiss (1997a) use the example of wine and health saying that people take the multiple messages in the media about alcohol/dose-response/heart disease protection and reduce it to " a couple of glasses of wine a day is probably okay" (p. 30). Lifestyle choices that increase the risk of chronic health problems / disease 'differ fundamentally' from those that present acute health risks (Vaughn, 1993). The influence of factors such as gradual onset, delayed negative consequences and experience with past harms all are important considerations that explain perception and response to long-term exposures (Vaughn, 1993).

People have "always been 'intuitive toxicologists', relying on their senses of sight, taste, and smell to detect harmful or unsafe food, water, and air" (Kraus et al., 1992, p. 215). Most contaminants cannot be detected at the levels found in water, food sources, and air by these means. The territory that lies between what people feel they know and what scientists are trying to communicate about health risks is sometimes vast and often difficult to navigate. "The problem of risk conflict...goes beyond science. It is deeply rooted in the social and political fabric of our society" (Slovic, 1999, p. 693).

2.2.2. TRUST IN RISK COMMUNICATION

Early risk communication research and literature mainly provides advice for communicators, implying that applying a few simple rules ('speak clearly' and 'speak with compassion') will be all that's needed to help the communicator overcome obstacles

(Rowan, 1994). Over the years the effort to better understand why risk communication often fails in one way or another, started to draw upon the fields of psychology, marketing, and education to explore how to build trust and deepen comprehension (Rowan, 1994).

Risks that are 'unfairly imposed' or perceived to be created by mistrusted institutions (e.g. 'big business' or the government') evoke strong risk-averse responses (Satterfield et al., 2004). To explain the discrepancies between people's extreme aversion to some hazards and their indifference to others, the perceived probability of possible consequences must be considered (Slovic et al., 1980). In addition, research has shown that 'experts' and laypeople have differing perceptions of the same risks (Slovic, et al., 1980; Fischhoff, 1985). Recipients of communications around risk may adjust risk estimates upwards or downwards to factor in what they think are likely biases on the part of the communicator (Fischhoff, 1995).

Most difficulties in communication about risks "originate primarily in the marked differences that exist between the two languages used to describe our experience with risks: the scientific and statistics language of experts on the one hand and the intuitively grounded language of the public on the other" (Powell & Leiss, 1997a, p. 26). What occurs in the gulf between the two languages clearly affects the outcomes of the intended and the received communication.

Experts and laypeople perceive risk differently even when presented with specific numbers of fatalities attributed to an activity. This difference in perception seems to come from the definition of risk itself (Fischhoff, 1995). Problems arise when 'experts' equate their research as objective and therefore 'true' while seeing 'perceived risk' as correlated with 'false' understanding (Powell & Leiss, 1997a). Powell & Leiss (1997a) call this "the arrogance of technical expertise" (p. 35). Confusion develops in part due to experts expecting lay people to understand complexities of risks and benefits (Powell & Leiss, 1997a). This trend was especially evident when reviewing the communication strategies common in phase one (1975-84) mentioned above. Meanwhile, variation exists even

among experts in environmental health risk professions (e.g. engineers, scientists) around uncertainty and confidence in risk analyses (Rizak & Hrudey, 2005).

Much has been said in the research about the effect that different underlying conceptions, values and assumptions have had on risk communication dialogue, more so than 'disagreements about facts' (Kraus et al., 1992). Two studies (USA and Canada) of expert and lay judgments of risks explored the implications of and explanations for the discrepancies for these two groups, examining 'intuitive vs. scientific toxicology' (Slovic et al., 1995). The resulting data indicated that the public is wary of chemicals, and toxicologists had lower perceptions of risk and more 'favourable' attitudes toward chemicals. Ultimately, the study indicates that "toxicologists need to play a greater role in interpreting the health implications of their data for the public" (Slovic et al., 1995, p. 674), while acknowledging the subjective (factors) and degree of uncertainty inherent in their analyses (Slovic et al., 1995). Further, According to research by Jardine & Hrudey (1996), fundamental terminology used by risk managers is not understood, e.g. 'probability' which by definition means 'likely to become real'. Words have a different meaning to 'experts' than that in common usage, and this results in a different message being received than is being sent.

Trust cannot be manufactured by the use of 'instrumental techniques of persuasive communication' alone, but rather trust accumulates slowly through the commitments of the institutions and their 'deeds, not words' (Powell & Leiss, 1997a). This trust is easily broken by lack of continuity in communication or communicators. Experts need to avoid creating a vacuum and to establish trust with iterative communication (Powell & Leiss, 1997a). Lack of iteration or even communication leaves room for the 'vacuum' to be filled with public fears which "become the substantial basis of the public framing for these risks...or the intuitively based fears and concerns of individuals simply grow and spread until they become a substantial consensus in the arena of public opinion" (Powell & Leiss, 1997a, p. 31). Conversely, lack of concern or other, possibly conflicting sources of information can fill the void where consistent messaging ought to be.

Trust is typically created slowly but can be destroyed by a single mistake and, further, trust-destroying activities seem always to hold more weight than the more indistinct trust-building ones due to 'the asymmetry principle' (Slovic, 1999). The damage can be irreversible once relations with one's communicants are poisoned (Fischhoff, 1995). Addressing risk controversies with 'more science' is likely to exacerbate conflict (Slovic, 1999) while repetition of message does not ensure comprehension (Furgal et al., 2005).

Weinstein & Sandman (1993) view issues of comprehension as follows: "About the communicator [or more likely the communicator's organization], one needs to know [for example] if it believes it knows what people should feel and do or if it wants simply to help people make their own educated choices, if it wants everyone to respond to a hazard in the same way or if it thinks that different responses may be appropriate, if it is more interested in making the audience happy or in persuading people to take action" (p. 113). Admission of uncertainty can cause the recipients of a message to see the scientists as confused, unskilled or evasive (Fischhoff, 1995). This is clearly counter-productive, when the intention is to be accurate and honest.

It becomes very complex to separate intended messages from unplanned communication and to causally link messages with observed behavioural outcomes (Kasperson, 1986). Meanwhile, the criteria used to evaluate messages is often vague (Weinstein & Sandman, 1993), mainly reflecting the original goals of the programme (e.g. 'improved decision-making'). "Distinguishing among different types of communication failures is possible whenever there are multiple types of errors...For example, when an audience rates the amount of information in a message, both 'too little' and 'too much' are departures from 'just right,' and the communicator may have grounds for preferring one type of failure over the other. In contrast, when the audience rates the clarity or helpfulness of a message, there is only one type of failure and this final criterion would not apply" (Weinstein & Sandman, 1993, p. 112). Types of communication failures are not equal (Weinstein & Sandman, 1993). Importantly, under-reactions and over-reactions to the same risk will result in different outcomes.

The believability of risk information is closely linked to institutional (or individual) credibility and trust (Kasperson, 1986). The limited effectiveness of risk communication efforts has often been linked to lack of trust in the risk manager or communicator (Slovic, 1999). This is a very complex process to anticipate and harder to remedy once mistrust has set in. It is of vital importance in the Aboriginal context, where external communicators have had a very long history of disregarding the local worldviews and practices and behaviours (Vaughn, 1995). The application of social values by the recipient therefore alters the way a risk/benefit message is understood.

Vulnerability, gender, environmental injustice and race (in that order) are significant predictors of environment and health risk perception (Satterfield et al., 2004). Studies in health and environmental risk and gender have indicated that women are more risk-averse than men (Satterfield et al., 2004). Perceptions of vulnerability lead people to feel more at risk from harms, and this sense of vulnerability includes experiences of discrimination, economic insecurity, and concern around physical health and healthcare options if they become ill (as a result of the harm) (Satterfield et al., 2004).

It is worth noting that Satterfield et al. (2004) warn that "race is and should be a contested term...as efforts to distinguish biophysical features of racial groups have largely failed. The construct of race is nonetheless meaningful in public life and remains an important social basis through which humans define themselves and are defined by others" (Satterfield et al., 2004). As such, much of the literature on risk perception demonstrates the 'White-male effect' wherein White men consistently perceive (the same) risks to be lower than do White women, non-White women and non-White men (Slovic, 1999; Satterfield et al., 2004). These papers surmise that White males perceive less risk because they in fact control, manage, create, and otherwise benefit from the technologies and activities associated with many environmental risks.

In the literature, both race and gender have been strongly linked to risk attitudes (Slovic, 1999). "Women have been characterized as more concerned with human health and safety since they give birth and are socialized to nurture and maintain life" (Slovic, 1999;

p. 692). Slovic speculated that "perhaps women see the world as more dangerous because in many ways they are more vulnerable, because they benefit less from its technologies and institutions and because they have less power and control over what happens in their communities and their lives" (Slovic, 1999; p. 692). These differences in perceptions and attitudes indicate the presence of "the role of power, status, alienation, trust, perceived government responsiveness, and other sociopolitical factors in determining acceptance and perception of risk" (Slovic, 1999, p.693).

Race and gender differences in risk perception point to a sense of vulnerability related to risks. "Vulnerability is covertly defined...as a generalized feeling of enhanced susceptibility to harm" (Satterfield et al., 2004, p.116) including perceived economic insecurity as well as personal and physical fragility.

Vaughn (1995) further shows that a technical expert may think they are communicating chronic risk exposure reduction information, while the recipient may be experiencing the message as laden with meaning around the injustice over the exposure and their vulnerability. Fuller understanding of the sociopolitical forces that shape risk perception may bring us closer to a scenario in which policy responds to and reflects diverse meanings of risk as well as diverse experiences of risk management (Satterfield et al., 2004).

Satterfield et al. (2004) agree with Vaughn (1995) and suggest that "risk experts communicating behavioural precautions to those living in minority communities may regard their information as, say technical discussions of chronic risk exposure, whereas those receiving the risk information may be thinking more fully in terms of distributive justice or the relationship between risk exposure and racial equality" (Satterfield et al 2004). Social-psychological studies on discrimination indicated that this results in an action-paralyzing effect (Satterfield et al., 2004).

Age has been demonstrated as a factor that influences environmental health risk perception (Vaughn, 1995; Slovic, 2000; Myers & Furgal, 2006). This is especially

important to consider when communicating with a target group that encompasses a span of years with possible age-based perception differences (Myers & Furgal, 2006). "Segmenting audiences regarding information needs and communication formats may help clarify which approaches to take with each audience" (Connelly & Knuth, 1998, p.656).

Another factor that comes into play is that there is often no single agency that is releasing communication around risk and with which all dialogue will occur. In some of the literature on risk communication, there is the notion that a message is 'agreed' upon and then disseminated, after which the communication obstacles are encountered (Miller & MacIntyre, 2001). Coordination among and between institutions and structures with any role in the environmental health risk management or communication is important to determine the best communication channels (Kasperson, 1986). The role of the media is sometimes a third voice in the already complex dynamic of risk communication. "The media have a clear, indirect influence on policy-making in that they can influence public beliefs and behaviour to which decision-makers then must respond" (Miller & MacIntyre, 2001, p. 237).

In summary, "good risk communication exists in the zone that separates the languages of expert...and public...and good risk communication practice seeks to break down those barriers and facilitate the productive exchanges between the two spheres" (Powell & Leiss, 1997a, p. 29).

2.2.3. RISK PERCEPTION IN CONTEXT

The context in which a message is released affects the response to it, and ultimately, the outcomes. This had not, until recently, been studied much in risk communication. The importance of context was originally borrowed from other fields such as education and psychology (Slovic et al., 1980). "Critical events and orientations toward risk may set the terms for debate long before 'formal' communication begins in a particular situation. From this contextual perspective, risk communication is always conceptualized as being a social and cultural phenomenon influenced by the nature of the broader decision

environment and *a priori* characteristics of stakeholders and other participants" (Vaughn, 1995, p. 172).

Vaughn (1995) suggests that there are three areas where sociocultural factors 'could be linked' to risk communication process:

1. how a situation is framed and defined initially
2. subjective weighting (by community)
3. general prior beliefs (including perceptions of the hazard and trust of communicators)

Attitudes about risk, patterns of social justice and responsible agencies are determined by cultural relationships such as the values systems of (any) distinct cultural groups (Tansey & O'Riordan, 1999). The sociocultural context includes access to economic resources which may be relevant to the issue, intuitive theories about relationship to exposure/health outcomes and what level of trust exists in the agencies doing the risk communication (Vaughn, 1995).

Communications 'should tell people what they need to know' and to do this, communicators must take into account the 'recipient's circumstances' (Fischhoff, 1995). It is important to pay as much attention to the (members of the) community's perceptions (of the risk) and to the communities' concerns, as to scientific variables (Hance et al., 1989). In addition to paying attention to these variables, communicators around risk ought to address the concerns of the community when explaining risk (Hance et al., 1989).

Keeping in mind barriers in language, concepts and attitudes towards risk is vital for good risk communication (Powell & Leiss, 1997b). Putting the data in context is imperative because ultimately it is the individuals and the communities (not the agencies) that will decide what is acceptable to them (Hance et al., 1988).

2.3. ENVIRONMENTAL CONTAMINANTS IN NORTHERN CONTEXT

Chemicals and compounds related to the manufacture, use and disposal (including accidental releases) of various industrial and agricultural products and processes are now found in all areas of the globe. Local sources of these contaminants in the North come from a wide range of activities including mining and the operation of military sites (e.g. PCBs at the RADAR site in Saglek, Labrador), community dumps / landfills and waste incineration (ubiquitous in the North). Long-range transport of contaminants by wind and ocean currents has brought to the North measurable amounts of pesticides, heavy metals, and radionuclides, which are then deposited via precipitation and atmospheric deposition (Barrie et al., 1992; Van Oostdam et al., 2003).

Transboundary contamination occurs due to the physical characteristics of these contaminants: they are persistent (i.e. slow to degrade) and have a volatile chemical structure —therefore they evaporate into the atmosphere and easily adhere to sediment and/or to lipids. Contaminants travel via dominant atmospheric air currents towards the poles and then, upon arriving in cooler climates, precipitate in the Arctic via rain and snow, and eventually deposit on the land, ice, and in water. In addition, in some cases contaminants travel via water currents directly to the north. To a lesser degree, biotic transport occurs: once ingested by migratory animals and birds, contaminants are redeposited in Arctic feeding or nesting areas via eggs, offspring and feces (Walker et al., 1996; AMAP, 2002; INAC, 2003a).

Once within the Arctic region, contaminants enter the local ecosystems and enter the foodweb via ingestion by a variety of animals low down on the food chain. Climate change, which is rapidly accelerating in the Arctic, may alter the contaminant deposition rates and the seasonal location of species that are consumed in the foodweb, perhaps altering the uptake of contaminants and ultimately human exposure to these substances in the near future (AMAP, 2002, 2009).

"One class of substances in particular, called persistent organic pollutants (POPs), has aroused concern" (Stockholm Convention on Persistent Organic Pollutants, 2009). Many

POPs pose such significant threats to health and the environment that on 22 May 2001, the world's governments met...and adopted an international treaty aimed at restricting and ultimately eliminating their production, use, release and storage" (Stockholm Convention on Persistent Organic Pollutants, 2009). The result was the Stockholm Convention on Persistent Organic Pollutants, which started by immediately targeting twelve 'particularly toxic POPs for reduction and eventual elimination' (Stockholm Convention on Persistent Organic Pollutants, 2009). It also established a system for reviewing additional chemicals 'identified as unacceptably hazardous' and channels resources into cleaning up the stockpiles of POPs that are extant.

The twelve persistent organic pollutants (POPs) are nicknamed 'the Dirty Dozen'. They were identified by UNEP (United Nations Environment Program) as of primary concern: PCBs (polychlorinated biphenyls), DDT (dichlorodiphenyl-trichloroethanes), dioxins, furans, toxaphene, heptachlor, HCB (hexachlorobenzene), dieldrin, aldrin, endrin, chlordane and mirex. They have served as the basis for much comparative contaminants research over the past few decades. Other contaminants found in the North include heavy metals (such as mercury, lead, cadmium) and radionuclides (e.g. Cesium 137). More recently, levels of PBDEs (polybrominated diphenyl esters), HCHs (hexachlorocyclohexanes, e.g. lindane) and several other contaminants of concern are being detected in increasing quantities in the North (AMAP, 2002; INAC, 2003a).

The Stockholm Convention on Persistent Organic Pollutants strives to reduce the release of the Dirty Dozen POPs into the environment and as a result the levels of some of these contaminants have dropped in Arctic regions. But while some of these chemicals are being 'phased out' in many areas of the globe, others are still in production and use. In addition, we are always finding new uses and applications for existing and new chemicals and compounds and so further contribute to the spectrum of contaminants to be found in the North. However, regardless of the current legislation to limit or stop their production and use, because of their chemical properties, many of these chemicals will persist in the global environment for many years to come (AMAP, 2009).

2.3.1. HUMAN EXPOSURE TO CONTAMINANTS IN THE NORTH

Contaminants have been linked to mutagenic, carcinogenic, neurodevelopmental, immunosuppressive and endocrine disruptive effects in humans (AMAP, 2003; Downie & Fenge, 2003; INAC, 2009). It should be noted that health effects on other mammals in the Arctic regions have also been determined to be the result of contaminants. Negative effects of contaminants exposure through diet (prenatally and neonatally) have been demonstrated in several cases outside of the North, such as the widespread exposure to PCBs (and other chemicals) through contaminated rice oil in Japan in 1968 (Powell & Leiss, 1997b). This exposure resulted in severe chloracne and other dermal effects and developmental problems in the infants of mothers who consumed this food. PCB exposure from consumption of fish in the Great Lakes region (USA and Canada) resulted in lower birth weights and shorter gestation (Selikoff et al., 1983; Usher et al., 1995). Most of chemical exposure assessments have been based on the health data collected post-occupational or accidental exposures (e.g. events such as cadmium-contaminated rice in Minimata, Japan and fungicide in grain in Iraq) (Archibald & Kosatsky, 1991).

Combined effects are extremely difficult to determine and are further complicated by a variety of confounding factors (e.g. people moving from place to place resulting in problems tracking exposure outcomes; individual health status and lifestyle choices) (INAC, 2009). People are rarely exposed to only one contaminant. Synergistic and additive effects may make the effects worse.

Northerners are particularly at risk to contaminant exposure for several reasons related to the environment they live in. Contaminants are differentially concentrated in their local environments due to global patterns of air and water currents and the deposition of contaminants in the region (AMAP, 2003; INAC, 2003a, 2009). Once there, these contaminants are very persistent or not easily biodegraded, and last a very long time in these cold regions. These chemicals are then taken up by small organisms living in lakes, marine systems or on the land and are then biomagnified up the food chain to the top levels. Northern people tend to be more reliant on these wild food sources than their southern counterparts and often consume predator species living at the top of northern

food chains and are therefore exposed to these contaminants via their diet. Finally, wildfoods are not 'screened' or tested for such substances in contrast to some commercially-produced foods, and thus exposure may go unchecked or uncontrolled in any way.

Greater than 80% of contaminant exposure for people in the North comes from diet (as opposed to occupational and other exposures) (Wheatley, 1994; AMAP, 2002; INAC, 2003b). People may be exposed to contaminants in the following ways:

- prenatally, through the mother's diet (in utero)
- neonatally, through breast milk (and the transfer of contaminants from the mother's diet both current and past)
- directly, through eating wildfoods throughout their lifetime
- through occupational and lifestyle choices (e.g. smoking is a major source of cadmium exposure)

Most at risk among the human population to the harmful effects of exposure to these substances are those individuals in prenatal and neonatal stages (INAC, 2009). Exposure at this time in human development is most critical because tissues and organs are most sensitive and any developmental anomalies can have significant implications on the health of the individual for the remainder of their lives. Neurological impairment, compromised cognitive function, lowered immune system function, and future reproductive difficulties are all linked to these stages of development in mammals. This means that women who are pregnant or in their childbearing years, identified as ages 13-45, in public health messages in Nunavik (Nunavik Regional Board of Health and Social Services, 2003) should be considered as being in a high risk category for exposure to some environmental contaminants found in northern food items. A mother's diet can affect her baby in utero, and breast-feeding women may unwittingly 'offload' or transfer their own body burden of contaminants to their nursing young (Kinloch et al., 1992; Schettler et al., 1999; Nunavik Regional Board of Health and Social Services, 2003; Brent & Weitzman, 2004).

Research in Nunavik has shown that prenatal exposure to certain POPS (such as PCBs and DDT) has had some subtle negative effects on birth weight, duration of pregnancy and eventual visual memory development (Nunavik Regional Board of Health and Social Services, 2003). Another developmental effect of concern is immunosuppression; respiratory illness is significantly elevated in Inuit children in comparison to their southern counterparts (Dewailly et al., 2000).

Despite this link between a mother's diet and contaminant burden and her baby's potential exposure, research overwhelmingly supports the benefits of breast-feeding to infants and to mothers as it has been shown to improve nutrition, increase infection resistance and possibly protect against breast cancer, among other benefits (Van Oostdam et al., 1999). Fatty acids present in wildfoods assist infant birth weight, memory, vision, motor development and overall mental development (Nunavik Regional Board of Health and Social Services, 2003). It should also be noted that in Arctic communities, substitutions for breast milk are expensive, sometimes difficult to obtain and to use or keep hygienic (e.g. formula that requires water to mix and for cleaning may be difficult to maintain in a community with a compromised water supply) (Van Oostdam et al., 1999). The uncertainty around the effects of contaminant exposure when measured against the benefits of breast-feeding has resulted in general support for Inuit mothers to breastfeed unless advised otherwise by a healthcare provider (Van Oostdam et al., 1999; Nunavik Regional Board of Health and Social Services, 2003).

The nutritional benefits of consuming wildfoods have been documented in several studies in the past decades. Country foods are nutritionally vital and are an important source of lipids, vitamins, minerals and protein, often the primary source of specific healthful nutrients (Van Oostdam et al., 1999). Inuit have consistently had lower rates of cardiovascular disease and one-third the rate of 'Southerners' for many cancers and diabetes (Kinloch et al., 1992; INAC, 2003a). The lipids found in sea mammals are considered to be the reason for low rate of heart disease in Arctic peoples (Van Oostdam et al., 1999). Foods such as the meat and blubber of sea mammals are very high in selenium, as well as vitamins A and C (AMAP, 2002). N3 polyunsaturated fatty acids

help prevent cardiovascular disease, improve visual acuity and are associated with higher birthweights (AMAP, 2002; INAC, 2009). Selenium (found in skin or muktuk of sea mammals) is counteractive for mercury and is beneficial for metabolic processes which are especially important in utero and during infant development.

Meanwhile, further complicating the risk and benefit issue are contaminant / nutrient interactions. Some foods contain counter-interactive nutrients (e.g. both selenium and vitamin E are protective against the effects of mercury exposure; Omega-3 fatty acids render PCBs less damaging) and others may be synergistic or additive (and make the effects worse) (Kuhnlein et al., 2000). In summary, there are both benefits and risks coming from the same foods – and therefore difficulties in communicating this complex health message (INAC, 2003a; Nunavik Regional Board of Health and Social Services, 2003; Brent & Weitzman, 2004).

Foods are also socially and culturally important and many available substitutions are nutritionally inferior and prohibitively expensive (Kuhnlein et al., 2000). Market foods can be prohibitively expensive and no matter what the price and preparation method, will not match the nutritional value of many customary wildfoods (Kinloch et al., 1992). In fact, the consequences of not consuming proper amounts of micronutrients (such as iron, calcium, zinc, retinol and certain fatty acids) is documented as having significant effects on health, especially during pregnancy, lactation, and infant stages of life (Kinloch et al., 1992). What people eat in northern communities has begun to change independent of any messages or concerns about contaminant intake. There is increasing consumption of imported foods bringing with it some new health risks (e.g. diabetes, obesity, and dental caries) associated with more "southern" dietary options (fast food, high sugar drinks) (Kuhnlein et al., 2000).

The Labrador Inuit Association Eco-Research study in Nain, Nunatsiavut reported that 176 out of 222 people who were surveyed "feel that eating traditional food is healthier than eating store food" (Lampe et al., 1997, p. 36). The top reasons given were "nutritional value and better taste" and "fresh, with no preservatives". This preference for

traditional food is especially significant when it comes to contaminants advisories because Nunatsiavut communities consume the widest range of species from the land and sea (Kuhnlein et al., 2000; Myers & Furgal, 2006). Research that was carried out in Nunavik with women on the factors that influence their diet choices around traditional food indicated that their decisions are made based on complex interpersonal attitudes and factors that exist regardless of the health messages delivered to them (Bernier et al., 2003). In a different Inuit community study, "respondents ranked traditional food as significantly more important than market food as healthy for children, healthy for pregnant and breastfeeding women, tasty, and important to community life" (Kuhnlein et al., 2000). Further, "any estimation of the importance of (subsistence) hunting should also consider socially beneficial factors related to Inuit identity, mental health and self-esteem" (Condon et al., 1995, p. 44).

A preference and beliefs study (with non-Inuit Aboriginal groups) about nutritional value indicated that these firmly held beliefs also may offset the intended messages around food choices (Wein et al., 1989). For example in the study by Wein et al. (1989), bannock was seen as slightly more healthful than white bread although it has identical nutritional components, and bannock is prepared by frying. Wild meats were rated as 'more healthful' than store-bought beef. In this study, seven of the ten 'best liked' foods were traditional wildfoods. However, "young people are more sceptical than their elders of the health value of these foods (Wein et al., 1989, p. 185). Although the study is not intended to be representative of other cultures, or communities, it shows that some notions about young people liking store food better than wildfood and other assumptions may be less simple or cut and dried than has been considered to be the case. In many northern communities, amounts greater than the TDI (tolerable daily intake) of PCBs have been recorded due to wildfood consumption habits (e.g. contaminant-dense parts of animals eaten, such as the liver) and dietary preferences (specific marine mammal species, etc.) (Kinloch et al., 1992). Some dietary recommendations suggest concepts that are judgment-laden or based on non-Inuit ways of thinking or behaving, for example the suggestion to eat 'x' amount of the 'edible portion of fish' may not translate well to actual consumption patterns (Kinloch et al., 1992).

A variety of economic benefits and social institutions lead to the deamplification of risk from consuming fish, for example, coupled with the delayed nature of adverse effects allows for further disbelief or disregard (Burger, 2000). Although Burger's (2000) research was largely based on fishing as recreation, her conclusion can be aligned with the Northern context in that the health risk messages need to be targeted specifically to those deemed most at risk from effects of contaminants in fish (e.g. pregnant women), and done so in a way which takes into account the innate reluctance to change consumption behaviour based on such a distant and non-tangible threat of harm (Hance et al., 1989; Burger, 2000). As Furgal et al. (2005) state, it is impossible to separate beliefs about autonomy, identity, continuity of culture from the discourse on contaminants in the Inuit community context. Culturally and contextually meaningful ways of assessing the 'success' of messaging still need to be developed and implemented (Furgal et al., 2005).

2.4. NORTHERN CONTAMINANTS AND RISK COMMUNICATION CHALLENGES

"Country foods are nutritious, bind communities together and reduce the risk for several diseases such as heart disease and diabetes."

(Nunavik Regional Board of Health and Social Services, 2003)

As indicated in the previous section, research has shown that Inuit are exposed to contaminants in their traditional diet of wildfoods throughout the North (sea and land mammals, birds and fish). Due to the relationship between Inuit and these foods, and the cultural, nutritional and social value of a diet rich in land and sea mammals and other wildfoods, it is vital that there is a dissemination and discussion of accurate information in appropriate ways about the risk of contaminant exposure through this diet in northern regions (LIA, 2003; Furgal et al., 2005). The levels of contaminants in wildfoods and the potential health effects they may have on residents of northern communities are of concern to Inuit: there is concern that the very foods they have been reliant on and have long considered nutritious may contain unseen 'poisons' (Usher et al. 1995; O'Neil et al. 1997).

Past experience in communicating about the potential risks of wildfood consumption has identified some difficulties in this process as well. One now 'classic case' is the communication of results related to PCBs in the community of Broughton Island, NWT (now Nunavut). Breast milk samples given by Inuit of this region at the hospitals where they delivered their babies indicated that these women had PCB levels almost five times as high as Caucasian women in Canada (Dewailly et al., 1989). It was determined a breastfeeding mother could, within 3-18 months, offload PCBs to her infant in an amount that would result in a blood level of 150 mg/kg, the lowest observed adverse effect level (LOAEL). This level was associated with impaired immunity and increased infection rates among Inuit infants (which were at that time, 10-15 times higher in that region than in southern Quebec) (National Institute for Occupational Safety and Health, 1977, in Dewailly et al., 1989). Subsequent media releases of information about the discovery of these high rates of PCBs in breast milk were alarming (O'Neil et al., 1997), e.g. "Inuit Diet Polluted, Scientist Reports" Winnipeg Free Press (Lowery, 1994) contradicting the researchers' recommendation that people not change their diet based on the research results (Powell & Leiss, 1997b). Due to the confusion, southern media reports and expert researchers were seen to be giving conflicting messages to the community.

The well-intentioned concern for animal and human health (O'Neil et al., 1997) started a sub-dialogue on how best to carry out communication around contaminants that continues to this day. Experiences like this have shown some of the potential pitfalls of incomplete communication strategies—confusion, loss of confidence in country foods and distrust of information-providers (Kinloch et al., 1992; Usher et al., 1995; Powell & Leiss, 1997b). Unfortunately headlines laden with alarm persist: "Pollutants drift north, making Inuits' *(sic)* traditional diet toxic" appeared in 2004 in the Boston Sunday Globe (Cone, 2004). The results of this type of communication in the media are unknown, but changes made in diet "include effects on lifestyle, culture, and socioeconomic impact...these 'indirect' health effects are frequently more important than the direct effects of contaminants" (Wheatley, 1994, p. 388).

If minimizing exposure (reducing risk) via reduced consumption of wildfoods, there may also be a loss of benefits. Making a change from a familiar diet can also create stress and anxiety. Meanwhile it is known that the same foods that are of concern for being a source of contaminants to humans also have many healthful and beneficial components (INAC, 1989; AMAP, 2003). "People haven't really gotten the message about contaminants" in ways that resulted in the right target group making the best diet changes to avoid contaminants and yet have optimal nutritional eating habits" (C. Furgal quoted in George, 2003). One strategy for responding to this problem is to encourage options within the realm of locally important foods—such as the programme in Nunavik that is helping pregnant women to substitute fish consumption (by providing them with a supply of it) for sea mammals to reduce the exposure to organochlorines while maintaining a high intake of Omega-3 fatty acids (George, 2003; Nunavik Regional Board of Health and Social Services, 2003). The public health communicators suggested that women of childbearing age (13-45) "must first ensure to eat a variety of nutritious foods in an adequate amount. Whenever possible, we suggest that women select country foods that are rich in fatty acids and less contaminated with PCBs (Arctic char, misiraq made from seal blubber instead of beluga) (Nunavik Regional Board of Health and Social Services, 2003). In this strategy, the 'message' reinforced the positive nutritional benefits associated with this consumption and actively promoted a diet choice that is protecting the next generation.

Another health promotion strategy used a social marketing approach to increase iron intake (Verrall et al., 2006). This approach "involved a needs assessment to identify the target audience, their current behaviour and underlying beliefs, the environmental factors that may prevent or facilitate their behavioural change, as well as the influential communication channels for message dissemination" (Verrall et al., 2006, p. 68). The strength of this approach is that the "design and implementation are based on the expressed preferences and values of the target audience" (Verrall et al., 2006, p. 68). The strategy utilized multiple communication channels and while several were "associated with an increased awareness of iron deficiency anemia and an increased self-reported use

of iron-rich infant food" (Verrall et al., 2006, p. 68), radio was reported to be the most successful media for reach and exposure of messages (Verrall et al., 2006).

Contaminants gossip—or the changing of the message as it travels through the community circuit of communication, much like the game of 'telephone'—has been identified as another factor in miscommunication (Usher et al., 1995). As with other kinds of gossip, the message may be exaggerated or downplayed or otherwise altered and distorted during its transmission around the community, resulting in a different message than that first released. With poor communication and some local misinterpretation there is a risk of creating confusion in communities and negatively influencing perception of wild foods and possibly disrupting healthy diet behaviours. Young women may well be the recipients of much nutrition information during their first pregnancy, well-intentioned but possibly inaccurate health advice may in fact be coming at them from all directions. Although the literature shows that gender is a significant influence on perception of risk, with females experiencing a greater sense of potential harm (Satterfield et al., 2004), studies in northern regions, including the community where this thesis case study was carried out, have shown that young women are not very concerned about the potential health effects of contaminants, despite messaging targeted to them as an 'at-risk' group (Myers & Furgal, 2006). They were generally less aware about the issue and also less concerned than hunters and elders in the same community (Myers & Furgal, 2006).

The complexity of risk reduction messages on this issue includes consideration of the following factors gleaned from past experiences (e.g. Wheatley & Wheatley, 1981; Usher et al., 1995; Furgal et al., 2005):

- resistance to message from authority stemming from history of less than ideal relationship with outsiders
- less country food equals less autonomy
- message suggests a disruption of traditional way of life and important social customs
- message may be seen as 'store food = good / country food = bad'
- access to store-bought food may be limited...by location, season and prohibitive cost

- available store food may not be a suitable substitute for the nutrition and other benefits gained from country foods
- once a message is delivered, there may be confusion, distrust, and distortion of content
- health risks must be balanced against the benefits of maintaining a diet of country foods

An awareness of the risks of raising fears or creating confusion in the communities is imperative when developing messages and choosing methods for dissemination (Kinloch et al., 1992; AMAP, 2003; Bernier et al., 2003; Furgal et al., 2003; INAC, 2003a). It really can be said that risk communication itself is not without 'risk' due to the many challenges that are faced in communicating on such sensitive environmental health issues with Inuit communities (Furgal et al., 2003). Efforts have been made in the North, via surveys and community tours to gather the concerns and preoccupations on these issues, all the while endeavouring to improve our methods and techniques for engaging the public and supporting informed decision-making in all coastal communities.

In order to disseminate this information in an appropriate context for 'at risk' (or sensitive) members of the population, we must first review current issues, avenues and approaches to defining and engaging these target populations. From our understanding of the need for risk-reduction among individuals in the developmental phases of life, there would appear to be a need to inform mothers (and young woman who are not yet mothers), or women of childbearing age, that is, in the entire range of ages 13 to 45. This in fact means targeting young women who are forming behaviours around food choice and who will eventually be making decisions for their children. As with other age-related distribution of specific health risks (e.g. heart attack or some cancers), there is a need to start education and communication early (how early is not discussed in the scope of this thesis) to engage these groups of people before they are likely to be exposed in order to increase the chance that they will make informed and balanced decisions regarding their health and food choices.

It is apparent that "different dietary and health promotion strategies are required for different population groups based on their respective food behaviours and needs" (Bernier et al., 2003, p. 6). In addition, a better understanding of food choice behaviour and the factors that influence it will help guide those strategies. In answer to the question, "what are the factors influencing country food and store food consumption and what is their order of importance regarding their effect on intention to consume certain foods?", Bernier et al. (2003) found that there was little indication (in Nunavik) that food choices are based on nutritional knowledge (e.g. "this food is good for me to eat" [p. 7]). Food preferences need to be taken into account with risk messaging, In the case of a Nunavik study on reducing exposure to mercury, the message needs to be clear about which animals or parts of animals need to be avoided and by whom (Wheatley & Wheatley, 1981). A list of 'safe' foods was developed and then a list of those to be eaten with care (esp. by pregnancy mothers). Even so, the overall advice was to continue to eat country foods.

There are many indications that Northerners have their own perspective on 'what is useful or pertinent' regarding risk issues (Furgal et al., 2005). Traditional land use knowledge is used to mitigate the 'risks' from various land use activities (e.g. ice knowledge, animal knowledge, etc.) (O'Neil et al., 1996). Inuit may also use their own guidelines for why not to eat something, usually based on visual cues from sick animals or seen when butchering them to eat (O'Neil et al., 1997). "People maintain a high level of confidence in their ability to detect problems in their food and other 'traditional activities', and are relatively resistant to external information that may suggest health risks." (O'Neil et al 1998, p.27). Contaminants are seen as an external threat to the Inuit way of life and there is some confusion about the source of the contaminants (O'Neil et al., 1997). Contaminants are understood by some Inuit to be a locally-generated and visible source of pollution or disturbance, like sewage, garbage, or parasites in wild animals (O'Neil et al., 1997; Furgal et al., 2005).

O'Neil et al. (1998) show that in an Aboriginal context "there is also a great amount of uncertainty and divergence of opinion when people lack either a historical or recent

experience with a potential environmental health threat" (O'Neil et al., 1998, p.27). Although they go on to say that there may be a blending of Western and local understanding when the beliefs are compatible, uncertainty is amplified when these belief systems are in conflict or disconnected (O'Neil et al., 1998).

Some other factors that may influence communication in Arctic communities have been identified by Furgal et al. (2005) to include language and communication patterns (e.g. lack of consistent terminology for science terms when translated into Inuit language) and the tendency of Inuit to be relationship-based around transmission of information, rather than information-based. This is related to learning by observation rather than being told. In addition "the connection (to country food) is only positive for Inuit" (O'Neil et al., 1997, p. 37). It seems that Inuit have difficulty conceiving of this piece of their cultural identity to be somehow 'unhealthy' (O'Neil et al., 1997). The restrictions on what to eat that 'science' has put forward to Inuit both undermines their confidence in their own knowledge systems and fuels resistance to discourse (O'Neil et al., 1997). This works well with vulnerability theory, which would indicate that Inuit are in part resistant to these messages because of previous harms from external authorities limiting their life in the (recent) past. "Communicating about contaminants must be seen as the engagement of two discursive formations, each grounded in alternative normative understandings of human-animal-environment relationships" (O'Neil et al., 1997, p. 39).

It is difficult if not impossible to quantify the effects that a change in relationship to traditional practices such as hunting and eating wildfood will incur, but they will likely be "costs...which are not trivial" (Archibald & Kosatsky, 1991, p. 25). It has been stated many times in the research literature, that communities need to be part of the equation in environmental risk communications. If advice is formulated and presented in cooperation with the community, then the community has the chance to express their concerns, have them addressed, modify the assessment of the exposures based on their experiences (e.g. if an advisory on eating wild animals is given, the community can give input on what parts of which animals they eat, etc.) and, finally to test the relevance of the advice given (Archibald & Kosatsky, 1991).

It appears that some past messages have not been effective in improving understanding of the contaminants issue. In a 2002 survey conducted in Nunavut and Labrador, questions were asked about whether there was any (target) group (i.e. WCBA) that may need to pay more attention to contaminants and dietary information and "74% said that they knew of no groups who should avoid eating certain country foods" (Myers & Furgal, 2006, p. 53). Open-ended questions revealed the same attitude and most respondents confirmed that "country food is good for you". In addition, the people with greatest awareness of contaminants tended to be hunters, and the target group was least aware of the issue. The message heard by Inuit about contaminants and health effects has not been borne out by observation or experience and is so far only a distant scientist or government agency prediction. Meanwhile, Nunatsiavummiut "seem to be acknowledging the risk and consciously acting to reduce it" (Myers & Furgal., 2006, p. 55).

It is compellingly argued that a process of two-way ongoing communication is needed to both engage and inform, and to learn from the perspectives of Inuit communities dealing with this environmental and public health issue (Furgal et al., 2003; INAC, 2003a). The most effective risk management is cyclical and iterative (Hance et al., 1988). A long-term strategy for communication must ensure that the public is informed of research activities and results, and that the comprehension, concerns and needs of the communities are continually incorporated into the process (Usher et al., 1995; Powell & Leiss, 1997b; INAC, 2003a). Figure 2 shows a two-way communication process identifying some of the key areas to consider in designing 'good' risk communication processes highlighted in the literature.

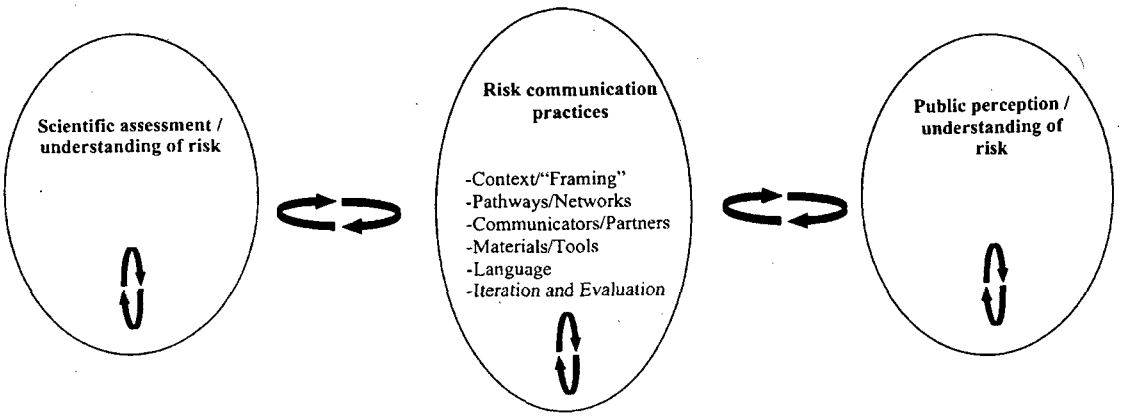

Figure 2: Two-Way Communication Model
Reprinted with permission. (Furgal et al., 2005, adapted from Powell & Leiss, 1997a)

Seeing risk communication as a form of 'persuasive message' means that it can be evaluated by established criteria (to see if it 'worked' or was effective) (Powell & Leiss, 1997a). Kasperson (1986) similarly says that risk communication efforts should be treated as research designs and therefore include rigorous ongoing and retrospective evaluation. Evaluation of risk messages has long been a stated goal of communicators but is seldom systematically carried out. This failure in design and implementation results in a situation where significant time and investment is needed to measure the results of the original communication strategies. This thesis indirectly explores the 'results' of past risk communication activities on this topic with a target group in order to understand their experience of risk communication and their perception about the risks and benefits involved with their nutritional choices and options.

2.5. SUMMARY

In summary, the literature indicates that there are many attributes that, when applied, can improve the process and outcomes of environmental health risk communication. There have been lessons learned from cases of well-intentioned but sometimes unsuccessful risk communication processes and approaches. The current literature around contaminants communication promotes the idea that several criteria need to be met to be sure that risk communication has been carried out with the best possible chance at effecting beneficial health outcomes.

Drawing upon the literature for common elements of 'good' or 'effective' risk communication, key categories to be used to lead the case study described in this thesis were identified. These inform the following framework and are used for the research both in a conceptual manner (designing data collection questions) and an analytical way (assessing or evaluating data gathered). Within these categories, a number of sub-elements were identified from the literature and used to look for the presence, absence or status of that element of the risk communication process, e.g. use of local language, within the case study. The sub-elements are presented in a question format to facilitate their use as an analytical tool for the case study in the thesis. Table 1 presents the complete category and sub-element structure of this framework. Chapter 4 will review the research methodology that used this framework.

The framework categories are:

- Message
- Context / Framing
- Pathways / Networks
- Communicators
- Materials / Tools / Process
- Coordination
- Capacity of Communicators
- Capacity of Recipients

Message refers to the actual content of the communication, or message. Context is the place (e.g. community) or situation into which this message is released, and framing means how it is 'housed' in relationship to other information. Pathways and networks are the means by which the message travels between the communicators and the recipients (and beyond). Communicators are those who compose, deliver and/or release the message. Materials and tools are the actual medium of a message (e.g. poster, pamphlet, radio broadcast) and process includes stages of the development of the message through to evaluation. Coordination refers to the existence (or absence) of coordinated message development or communication strategies. Capacity of communicators includes the

responsibility to educate on the topic and the ability to do so based on training, financial resources, and other opportunities or constraints. Capacity of recipients is the ability of the target group to understand the message, as it is delivered to them, based on their existing knowledge.

Table 1: Framework Categories and Sub-elements

CATEGORIES	SUB-ELEMENTS
Message	• is the information balanced: does it include both risks and benefits (e.g. gathering and consumption of wildfood has both r/b) • is the message at an appropriate language level for target group(s) • is it clear what the intent of the message is (e.g. is it a health advisory) • is the source (of the material) identified clearly (this is also in Communicator section—is it clear whose message it is) • is the information available in an appropriate local language / dialect
Context / framing	• does message include (or somehow take into account) local perspectives • is it appropriate to local context (e.g. takes into account local customs, reality of food access, uses imagery relevant to culture, etc.) • is the target group's existing risk perception on this topic known and considered in the message development and delivery
Pathways / networks	• is message delivered via pathways / networks used by target group • is the message delivered taking into consideration competing messages on this topic from other sources (e.g. does the communicator do anything to take this into consideration, such as correct other messages) • are the tools in locations that are accessible by target group(s)
Communicators	• is the communicator easily identifiable (e.g. media, academic, government, local agency, internet, family, friend, health professional, teacher) • is the messenger a recognized and trusted source of information for the target group • is the source (of the material) identified clearly [this is also in Message section—is it clear whose message it is]
Materials / tools / process	• are the materials / tools used by the target group(s) • does the process provide for two-way communication (e.g. presented in a format that allows for a response, etc.) • is the communication material pre-tested or field tested (each event) • is the communication strategy designed with an evaluation process built in (each event) • is evaluation regularly carried out • is feedback regularly incorporated into changes to the messaging / materials
Coordination	• is there coordination (amongst organizations) behind the communication strategy, including development of the message • does message come from more than one communicator / source when it is disseminated into the community

	○ if so, is message consistent (e.g. coordinated for consistency) • does a local organization(s) or communicator have the mandate to communicate / educate on this issue • is there communication within and between relevant organizations (or departments of an organization) on this topic, including across sectors (e.g. NGOs, LIA, LIHC, province, etc.) and is this included in the development and delivery of the message
Capacity (message communicators)	• does the communicator organization have trained and educated individuals on these topics • are there people from these organizations whose mandate it is to inform / educate on this topic
Capacity (message recipients)	• is local population educated on the topic • does the local population have sufficient 'science literacy' to understand the message (at the level it has been communicated) • does the local population have the economic ability to act upon recommendations if necessary (e.g. to buy nutritious foods to supplement or replace wildfood sources)

CHAPTER 3: STUDY AREA

3.1. NUNATSIAVUT & NUNATSIAVUMMIUT

"*We are Inuit. Our people and culture have occupied the circumpolar regions of the world for more than 5,000 years - from Russia east across Alaska, across Canada's north to the coast of Greenland. Descendants of the prehistoric Thule, hunters who were drawn to Labrador by its abundance of whales and other wildlife, Labrador Inuit are one of the founding peoples of Canada. A maritime people, we are deeply connected to our environment. In Inuit culture, we speak of 'the land' as encompassing the land, sky, watersheds and ocean areas on which our way of life has depended for thousands of years. Our long history is one of adaptation to change brought about by colonialism, resettlement and dislocation from our traditions. It is a story of how we have re-established control over our cultural, economic and political destiny and have readied ourselves for self-government. Most of all it is a story of persistence.*"

(Nunatsiavut Government, n.d. [c])

The area in the northeastern tip of the Canadian mainland known as Nunatsiavut, along the Labrador Northcoast, is geographically isolated and only reachable by plane or boat. A large portion of the vast area that has been customarily used by Labrador Inuit was designated Nunatsiavut ('Our Land') by a Land Claim Agreement (2004) between Canada's federal government and the Inuit of this region.

Nunatsiavut is one of four Inuit regions in Inuit Nunangat, the 'Inuit Homeland' in Canada. The other regions are called Inuvialuit (1984), Nunavut (1999) and Nunavik (1975). By their own accounting, there are approximately 53,000 Inuit in dwelling in 53 predominantly Inuit communities (ITK, 2009a). The 2006 Census enumerated 50,485 Inuit living in Canada (Statistics Canada, 2008). More than three-quarters of Inuit live within the four Inuit regions across the North (ITK, 2009a). Many Inuit live outside the region and many non-Inuit, including other Aboriginal people, live within the same Northern communities as Inuit. Please see Figure 3 for a map of Inuit Nunangat.

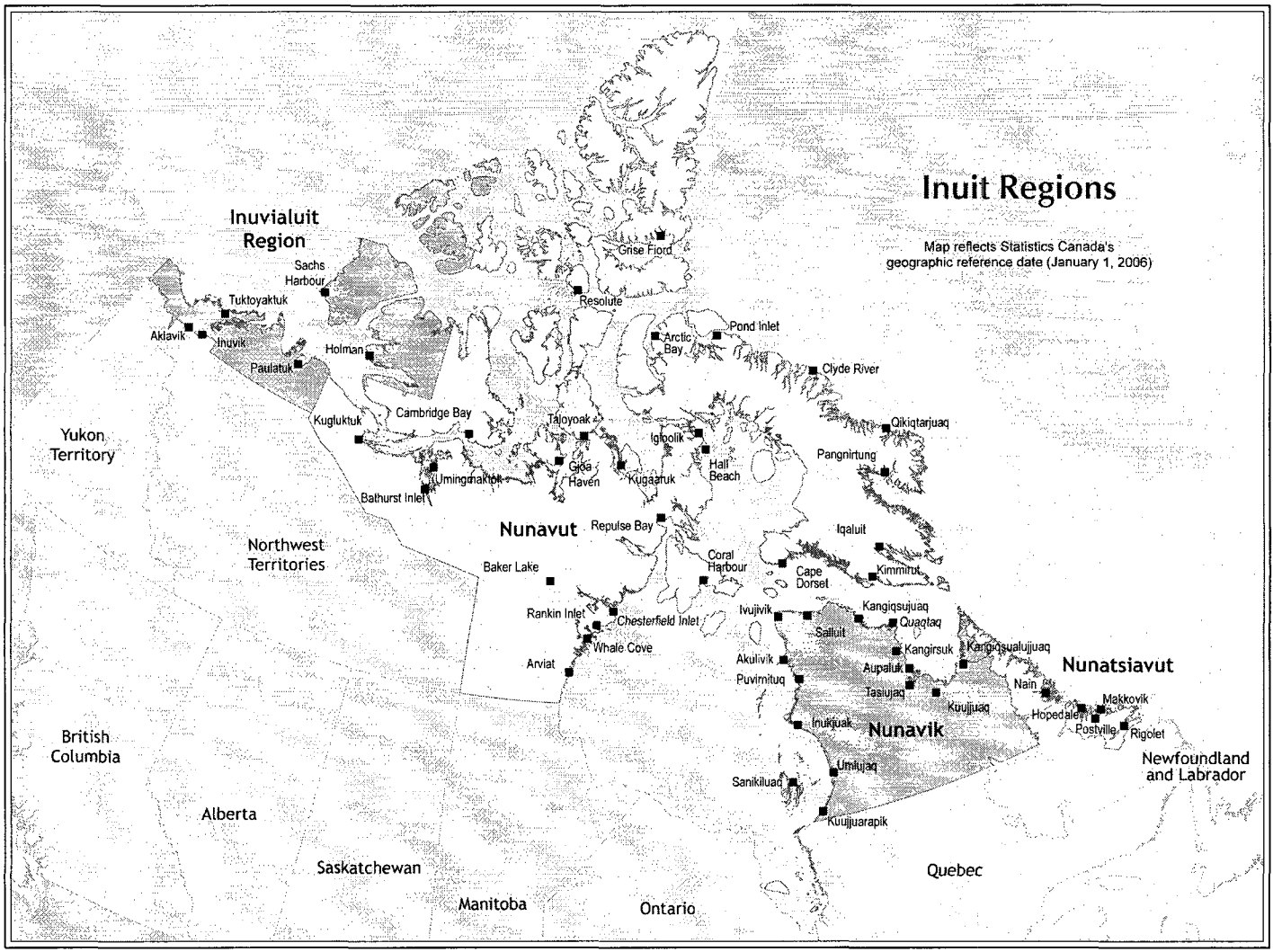

Figure 3: Map of Four Inuit Regions (Source: Statistics Canada, 2007)

The Inuit of Nunatsiavut are culturally and linguistically part of the peoples who occupy the Arctic and parts of the sub-Arctic; from Alaska east across northern Canada, Greenland and the Arctic edges of the former Soviet Union (Voisey's Bay Nickel Company [VBNC], 1997). In many respects, Nunatsiavimmiut represent the most southerly expansion of Inuit culture, and they have been in regular contact with Europeans since at least the sixteenth century, far longer than Inuit in other regions (VBNC, 1997).

Moravian missionaries were the first Europeans to establish a presence north of Hamilton Inlet (present day Happy Valley-Goose Bay) on Labrador's coast. Once the Moravians opened their first mission in Nain (1771) others quickly followed elsewhere along the coast. Granted large tracts of land by the British, they established themselves by setting up trading posts and converting Inuit to Christianity (Higgins, 1998; Nunatsiavut Government, n.d.[d]). This signalled significant change in Labrador Inuit society. After the mid-1700s, Christian missionaries and trading company employees increasingly interacted with Inuit in this region. "Colonial officials often relied on mission workers and fur traders to administer the Aboriginal communities...Newfoundland and Labrador Governor Sir Hugh Palliser, invited the Moravian Church – a protestant sect that worked with Inuit [in] Greenland – to establish mission stations at Labrador during the 1770s. Palliser hoped a Moravian presence would help curb mounting hostilities between the Inuit and Europeans" (Higgins, 2008). "In addition to providing the Inuit with religious, medical, and educational services, the Moravians took over all trade operations with the Inuit and forbade Europeans from entering mission grounds, which effectively ended hostilities between the two groups. Although mission workers sought to protect some aspects of Inuit culture – they taught reading and writing in Inuktitut and provided Inuktitut translations of the New Testament – they also promoted Christian ideals that undermined the Inuit belief system" (Higgins, 2008).

These changes also unwittingly resulted in devastating consequences to Inuit health. Moravians 'discouraged' Inuit from living communally and nomadically by their centuries-long seasonal patterns of following food sources, and urged them to live a

stationary, mission-centred existence. "By the late 1800s, the winter homes of the majority of Labrador Inuit were Moravian Mission Stations. Such close contact with Europeans exacted a heavy price. Many Inuit died from exposure to European diseases to which they had no immunity. Most devastatingly, the 1918 Spanish flu epidemic, brought on a Moravian supply ship, wiped out one-third of the Labrador Inuit population" (Nunatsiavut Government, n.d. [d]). This was just one of "a series of epidemics for which the Inuit had little or no immunity, including measles, whooping cough, flu, mumps, scarlet fever and typhoid" (VBNC, 1997). Many Inuit died as a result of these epidemics, especially after the Newfoundland schooner fishery expanded into northern Labrador (mid to late-1800s), increasing contact with outsiders (VBNC, 1997).

Inuit life in this region had become more and more connected to the trading posts—which initially flourished—but in the 1920s the Moravians experienced financial losses and sold their stores in the northern communities from Killinik to Makkovik to the Hudson's Bay Company (HBC). In 1940 the Commission of Government took over the HBC stores (Nunatsiavut Government, n.d. [d]). After Confederation (1949), the Moravian Church, the Grenfell Medical Mission and the provincial government decided to suspend services to the two remaining most northerly Inuit communities of Hebron (1959) and Nutak (1956) (VBNC, 1997). This left residents with no choice but to relocate; Inuit from these communities were resettled to Nain, Hopedale, Makkovik and North West River (VBNC, 1997). The VBNC Environmental Impact Statement (1997) acknowledged a long history of broken promises to Inuit by both government and commercial powers on improved housing, schools and other services. "The government told Inuit that our social and economic welfare would be improved. Instead, a social, cultural and economic disintegration occurred, the effects of which can be felt to this day" (Nunatsiavut Government, n.d. [d]).

Traditionally, Labrador Inuit were "a mobile people whose movements followed the seasons and migratory movements of the animals. European activity and establishment of the Moravian missions resulted in dramatic and lasting changes in traditional Inuit culture, and settlement and subsistence patterns" (VBNC, 1997). "The devastation of

Labrador resettlement remains largely an untold story. Dislocation from traditional lands and natural resources was devastating for a people whose very culture and identity were intrinsically connected to the land. Inuit were resettled to communities where the residents had already established fishing and hunting rights; the newcomers were relegated to more distant and less prolific resources. Many were ostracized in their new communities. For many, the failed promise of a better life and forced dependency on social programs resulted in loss of dignity, stigma and alienation. By the 1970s, an ancient culture marked by resourcefulness and independence had suffered many losses" (Nunatsiavut Government, n.d. [d]).

There is large body of literature on the impacts of colonialism upon Inuit culture as a whole (and Aboriginal cultures more generally). Tester & McNicoll (2004) follow on O'Neil's term 'colonial stress' and sum up the multigenerational impact of colonial interference with Inuit life this way: "Grandparents of the current generation of young people were born and lived much of their lives on the land, in camps with Inuit values and practices in tact. This generation and their children had an initial and enduring fear of Qallunaat [White] authority figures...who often...removed children from families and camps to attend school, interfered with cultural practices, treated welfare recipients harshly...The result was to develop a fear of authority and doubt about beliefs and practices binding Inuit culture together for generations" (Tester & McNicoll, 2004, p. 2633).

Today, the regional population is still predominantly Inuit; there are also Innu in the region, but Innu are an unrelated Aboriginal group. The Inuit population of the region is growing rapidly. The Nunatsiavut population also includes a large number of the descendents of European settlers in this region who married Inuit women: they are known as Kablunângajuit (Higgins, 2008). These are people whose European ancestors came to the area (mostly in the 1800s), settling down as trappers, hunters and fishers. "The settler lifestyle and culture embraced elements of both European and Inuit practices. They were much less nomadic than the Inuit, and settled as family groupings in the larger, sheltered bays, chiefly to the south of Nain. Unlike the Innu and Inuit, they

established relatively well-defined trapping territories and had a stronger sense of ownership of the land they used...these family groupings came to be associated with the bays in which they lived" (VBNC, 1997).

Although the Nunatsiavut Government now governs the Land Claim Region, at the time of this research (2005) it was governed by a series of agreements between the Labrador Inuit Association (LIA), and the provincial and federal governments. The Labrador Inuit Association was founded in 1973 to represent the interests of the approximately 5,000 Inuit who live in several scattered communities along this coast. The process of negotiating and approving the agreement took many years. The Labrador Inuit Land Claim was filed in 1977, but negotiations did not begin until 1988. An Agreement in Principle between the Labrador Inuit, the province and the federal government was signed in June 2001. In April 2002, Labrador Inuit adopted a Constitution. Two years later, in May 2004, the Land Claims Agreement was approved by 76 percent of the voters in the region. Approvals by the province, the Crown and the federal government followed. The Nunatsiavut Government met for the first time on Dec. 1, 2005. Please refer to Appendix A, "Nunatsiavut Land Claims Milestones" for more information.

Nunatsiavut Government is, in its own words, "a regional ethnic government...(with) many of the responsibilities and rights of other governments, such as planning for sustainable economic development, protecting and preserving our Inuit culture and implementing social programs on behalf of its beneficiaries" (Nunatsiavut Government, n.d. [a]).

Nunatsiavummiut claim Aboriginal rights and title to land and sea that they have customarily used for centuries. The Land Claims Agreement set out details of land ownership, resource sharing, and self-government. The Labrador Inuit Settlement Area totals approximately 72,500 square kilometres (28,000 square miles) in northern Labrador and 48,690 square kilometres (18,800 square miles) of sea. Labrador Inuit do not own all of this land, but have special rights of use based on their traditional land use. (Within the Settlement Area, Labrador Inuit own 15,800 square kilometres (6,100 square

miles) designated as Labrador Inuit Lands). The Agreement also provides for the establishment of the Torngat Mountains National Park Reserve, consisting of about 9,600 square kilometres (3,700 square miles) of land within the settlement area (Nunatsiavut Government, n.d. [a]). For a map of the land claim area, please see Figure 1.

Nunatsiavummiut rely on local food sources supplemented by imported market foods. Inuit in Nunatsiavut continue to benefit from a close relationship with their environment and the wildfood it supplies to them. Local wildfood consumption includes caribou (*Rangifer tarandus*), sea mammals (especially seal – *Phoca hispida*), crustaceans, fish (e.g. *Salmonid spp.* and Arctic char – *Salvelinus alpinus*), birds (such as the Canada Goose -- *Branta canadensis*), bird eggs and berries. While the region is geographically isolated, it has had regular access to commercially produced foods via sea and air transport for decades. Wildfoods continue to be vitally important to Nunatsiavummiut, both socially and culturally, and the nutritional value of local wildfoods is important to the overall health of individuals and communities.

This region was identified as an appropriate setting for a case study to look at the communication of information on contaminants, health and risks and benefits of a wildfood diet due to the region's own identification of a need to 'step back' and review communication strategies on this topic before releasing more messages about contaminants and health in order to be most effective and supportive to individuals making informed decisions on this topic. Some of the communities in the region have become involved in other environmental awareness projects—waste management, indoor air quality testing and the PCB clean up at Saglek military site (LIA, 2003).

3.2. CASE STUDY COMMUNITY (NAIN)

The majority of the field research was carried out in Nain, the largest of the communities in Nunatsiavut. Established in 1771 by Moravian missionaries, Nain is on the north coast of Labrador at 56° 30' (Nain Inuit Community Government, 2009). Nain had an estimated population of 1230 (most of whom are Inuit and Kablunângajuit) in 2004, while according to the 2001 Census, the population of Nain was 1159 (a large increase over

their 1996 population of less than 900 people) (Nain Inuit Community Government, 2009).

Nain is "the northernmost municipality in the province of Newfoundland and Labrador. It is approximately 230 air miles north of Happy Valley-Goose Bay" (Nain Inuit Community Government, 2009). Transportation services are provided year-round by air and in summer/ fall there is a coastal boat service (July to November), transporting freight and passengers to and from Nain. The only roads are those within the town itself (and these are gravel). Local transportation is mainly by boat and all terrain vehicles (ATVs) and a few cars and trucks in summer, snowmobiles in winter.

In late spring, just before the ice breaks up from the harbour (usually in June), people fish for trout, for home consumption, in the mouths of rivers in the Nain area (Nain Inuit Community Government, 2009). Subsistence hunting occurs year-round for different species of animals: ducks and geese are hunted in the Fall just before freeze-up; caribou is mainly hunted in the Spring when the George River Caribou Herd often passes on its way (from the Quebec border) to calving grounds in Labrador. Some trapping is done during winter months for fox and wolf for furs. Seals are hunted year-round. Berry-picking is a popular fall activity. The commercial fishing season is approximately July to October. The Nain Fish Plant (operated by the Torngat Fish Producers' Co-operative) processes mainly Arctic Char and scallops (for export and limited local purchase) and provides seasonal local employment.

Nain has two retail grocery stores; a convenience store; a 26 room hotel with dining room, bar and conference room; several boarding houses; a gift/souvenir shop; video rentals; a diving company; numerous small contracting companies offering home office services, hairdresser/gift shop, construction, heavy equipment, heating, plumbing, electrical, trucking, long-liner (boat) charters and other services. There is a bulk fuel storage facility; and the Labrador Inuit Development Corporation has Anorthrosite quarries 7-8 miles from Nain at Ten Mile Bay and further south at Iggiak. This valuable stone is shipped away to be refined into tiles and high-end kitchen surfaces.

Nain has television channels provided by C.B.C. and Persona Communications; A.M. Radio provided by C.B.C. and the OKâlaKatiget Society, which broadcasts English and Inuttitut radio programming along the coast as well as operating a television production centre. Several communities have their own local FM stations, providing an important source of information to many Nunatsiavummiut. The other main communications links are telephone and Internet. Many residents have private satellite dishes.

There are several education facilities in Nain: the Paivitsiak Children's Centre (a pre-school daycare delivered by the LIHC); Jens Haven Memorial School is operated by the Labrador School Board where about 341 students attend Grades Kindergarten to 3 in one building while Grades 4 to 12 are in a separate building; and the College of the North Atlantic conducts a community program of Adult Basic Education and other programs. Several provincial and federal government departments are represented in Nain, including the Department of Human Resources & Employment / Child Youth & Family Services, Health & Community Services; Victims Services & Corrections Divisions of the Department of Justice; Department of Works, Services & Transportation; Royal Canadian Mounted Police (1 Sargent & 5 Constables); Canada Post (Post Office); and the Department of Fisheries & Oceans. A seven member Town Council, elected by residents every four years, employs 21 staff to administer municipal affairs and to provide municipal services. Labrador Legal Services provides visiting Court Worker assistance to people with legal problems; there is a Group Home for young offenders operated by the Martin Martin Group Home Board; a shelter for women and children in crisis is operated by the Nain Safe House; and the Nain Volunteer Fire Department provides fire prevention and protection services from the Fire Hall.

Health Labrador Corporation has a Health Centre staffed by five nurses, one nursing supervisor, five full-time personal care attendants (PCAs) and three part-time PCAs, one clerk, one laboratory technician, four maintenance workers (full time) and a roster of visiting doctors and dentists, who provide health care services to the community. The Nunatsiavut Department of Health, Education, Social and Economic Development

provides services delivered by Community Health Workers, Mental Health Workers, and Home Care Workers, and through a Public Health Office.

This region, and the community in particular, were favourable for a case study setting because this research draws on the ongoing commitment by several organizations to learn about community perspectives regarding this issue through various two-way communication efforts with residents of Nunatsiavut. The study was part of an evolving partnership between the Labrador Inuit Association (now the Nunatsiavut Government), Inuit Tapiriit Kanatami (ITK), Indian and Northern Affairs Canada (INAC) and researchers at the Nasivvik Centre for Inuit Health and Changing Environments (Laval University). An objective of the Northern Contaminants Program (NCP) of INAC is "to reduce or, wherever possible, eliminate contaminants in traditionally harvested foods while providing information that assists informed decision-making by individuals and communities in their food use" (INAC, 2003b). In Nunatsiavut, the Northern Contaminants Program had been working with the Labrador Inuit Association for nearly 10 years.

At the time of this study, Nain was the home of the head office of the LIA, now it is the administrative hub for the regional government whereas Hopedale hosts the legislature. The LIA Research Office, housed in Nain, was responsible for providing information to Nunatsiavummiut on research about contaminants, their effects on wild food and the environment. The LIA Research Office has assisted residents of Nain, Hopedale, Postville, Makkovik, Rigolet and Happy Valley-Goose Bay by providing information about risks, the means to reduce exposure to risks, and information on the benefits of traditionally harvested foods to support residents in making informed decisions about their diet and health (LIA Research, 2003). In addition, the office and its researchers act as liaisons with outside researchers conducting work in the region on these issues, supporting their work and aiding them in conducting ethical, effective investigations and communication of these results to regional residents. This office provided logistical support and Inuttitut translation during the field research phase of this thesis.

Another reasons that Nain was seen as an appropriate location for a case study was that a research relationship was easier to establish with this community as I was already a familiar face in the community, having worked there previously for two summers with good rapport with the Town Council office, LIA and community members.

3.3. INUIT HEALTH BACKGROUND

In order to further set the context for this case study, it is important to be aware that there are many challenges to health in Inuit communities across the Circumpolar North and specifically, "regardless of the criteria of health (that) professionals choose to employ, the Inuit of Labrador end up with an unfavourable assessment...infant mortality rates and accidental deaths are higher than the national average for Canadians and for native peoples; and high rates of suicide, tuberculosis, and alcoholism have caused a great deal of concern" (Baikie, 1990). None of this is surprising. Aboriginal people across this country suffer poor health and socio-economic conditions. Many determinants of health that the average Canadian takes for granted are not so in Nunatsiavut, e.g. "water and sewage systems range from virtually non-existent to adequate" (Baikie, 1990). Despite rapid population growth and a subsequent housing boom some "housing in Nain is sub-standard and overcrowded in some areas of Town. A few of the houses are not using the Town's water and sewer system, mainly due to lack of financial resources on the part of the home owners" (Nain Inuit Community Government, 2009).

"Particularly as it relates to health conditions and services, the history of the Labrador Inuit is quite different from other Aboriginal groups. The Inuit looked after their own health needs until the Moravians offered limited care [late 1700s], a service later assumed by the Grenfell Mission [c.1894], a charity serving the 'benignly neglected' remote region of northern Newfoundland and Labrador, during British rule" (Baikie, 1990). Aspects of health care were the responsibility of the federal government's Department of Health and Welfare after Newfoundland joined Canada during Confederation (1949). Many nursing stations were built in the region during this era (Makkovik, Hopedale, Nain). "But health care delivery systems, while essential, are only a small contribution to well-being in body, in mind, in spirit, and in the community. Health is inextricably tied to

social, economic and environmental factors; unemployment stats, housing conditions, and health factors are as valid indicators of health as mortality rates or cases of active or reactive tuberculosis" (Baikie, 1990).

The Labrador Inuit Association created the Labrador Inuit Health Commission in 1985 to "address health care issues for its 5,000 members" (ITK, 2004, p. 10). LIHC reported directly to the LIA board of directors and specifically to their Health Committee. Funding for LIHC was provided by a transfer agreement with the federal government and through specific project-based contribution agreements (ITK, 2004).

Much attention has been paid recently to the health and socio-economic conditions that Inuit experience, especially in light of health data that indicate that Inuit have a lower life expectancy—by about fifteen years—than their fellow Canadians (ITK, 2009a). Suicide rates and tuberculosis cases across Inuit Nunangat are both approximately 11 times the Canadian average (ITK, 2009a). As is true for all people in all parts of the globe, lifestyle choices among Inuit also adversely affect their health. About 58% of Inuit adults smoked on a daily basis, over three times the 17% reported among all adults in Canada, according to the 2005 Canadian Community Health Survey (Statistics Canada, 2008). The Inuit population is young, with a median age of 22 years, compared with 39 years for the total Canadian population (Statistics Canada, 2008). In 2006, 12% of the Inuit population was aged four and under, more than twice the percentage for the total Canadian population. By 2016 the population is expected to exceed 60,000; it was 38,000 in 1991 (Health Canada, 2000). This young and growing population clearly faces many health challenges in their communities.

For many Inuit (across all of Inuit Nunangat), access to adequate and affordable food is not simple and "about 30% of Inuit children had experienced 'food insecurity' at some point. That is, they had gone hungry because the family had run out of food or money to buy food. Of the group of children who had experienced hunger, this was not a regular occurrence for 33% of them. However, for over 4 in 10 of these children, this happened every month, or even more often" (Statistics Canada, 2008). This issue is directly related

to the topic of this thesis research because wildfood has always been an important part of the total diet of Inuit and therefore concerns over its safety or healthfulness affect the food security equation in Inuit communities.

The health realities of Inuit and Nunatsiavummiut are important to bear in mind when assessing the context into which any health risk messaging has been dispersed in the past, and to have a clearer understanding of the other potential concerns facing the participants of this thesis study. Please see Table 2 for an overview.

Table 2: Population and Health Statistics for Inuit*

POPULATION AND HEALTH STATISTICS
Inuit total population in Canada: 52,000
Population in Nunatsiavut, region of study: 5,000
Population growth: 12% Pop growth between 1996-2001 (compared to 4% in Canada total)
Population age: 39% of Inuit are under age of 15
Fertility rate: 3.21% (total # of children a woman gives birth to in her lifetime) (Canadian total is 1.56%)
Breastfeeding: 51-66% (and averages 14.5 mos. in duration across all regions)
Infant mortality: rate declining but still 4x higher than Canadian average
Education: 57.7% do not complete high school

*for all of Inuit Nunangat except where stated (Source: ITK, 2009a)

CHAPTER 4: RESEARCH METHODOLOGY

4.1. INTRODUCTION

This thesis used a qualitative exploratory approach within a case study, drawing upon a variety of qualitative methods for data collection. It started with a literature review to inform a conceptual and analytical framework on risk communication and the categories identified in this framework were then explored through interviews, focus groups and document review in the case study community. This Chapter presents the research methodology and methods used in the study after which the results are presented and interpreted and discussed in Chapters 5 and 6 respectively.

4.2. RESEARCH METHODS LITERATURE BACKGROUND

The guidelines in Krathwohl (1985) helped form the structure of a sound thesis proposal, based on the simple idea that the proposal "is a plan of work to learn something of real or potential significance" about a topic (Krathwohl, 1985, p. 13). The nine questions that Creswell (2003) suggests for proposal writing guided my research design:

1. What do we need to better understand your topic?
2. What do we know little about in terms of your topic?
3. What do you propose to study?
4. What are the setting and the people that you will study?
5. What methods do you plan to use to provide data?
6. How will you analyze the data?
7. How will you validate your findings?
8. What ethical issues will your study present?
9. What do preliminary results show about the practicability and value of the proposed study?

In an effort to be certain this qualitative study has rigour, criteria from research design literature was reviewed and incorporated. Rather than distinguish between the characteristics of qualitative and quantitative, we ought to focus on the two research

stages of collecting and analyzing data (e.g. in collection phase are we using methods that elicit structured or unstructured data sets?) (de Vaus, 2004). Credibility (authentic representation of the experience), transferability (can it fit other contexts), dependability (or reliability, e.g. variability tracked to identifiable sources) and confirmability (the extent to which biases of the researcher influence interpretations; reviewed by committee to conclude that findings are dependable) were strived for in this thesis research (Lincoln & Guba, 1985, in Baxter & Eyles, 1997).

The qualitative framework applied to this thesis design allows for the information to be based in the social context which surrounds it (Seidman, 1998); Arnold, 2004). People know about their own experiences and have the ability to provide meaning to those experiences (Usher et al., 1995; Arnold, 2004). The objective of understanding phenomena of individuals and groups is suited to a case study approach (Yin, 2003). Qualitative research methods are often characterized as providing "rich data about real life people and situations and being more able to make sense of behaviour and to understand behaviours within its wider context" (de Vaus, 2004, p. 5).

Good explanations start with good theory (hypothesis) followed by theory testing (research) (de Vaus, 2004). Existing theories and concepts form the basis of new research ideas or theories to be tested. "Theories provide a context in which to place particular observations which helps us to see the possible significance and meaning of observations" (de Vaus, 2004, p. 20). The theoretical lens through which the study was carried out was developed by applying theory to a case study. Use of theory delimits the parameters in the study (Creswell, 2003).

Once there is a theoretical lens for viewing the research through, the interview process and questions need to be developed and the participants need to be located and selected. Snowball sampling is often the "best way to locate subjects with certain attributes or characteristics necessary in a study" (Berg, 2004, p. 36). In the case of small communities and short field research time, it can speed up the process of tracking people down, since once in the community, people can literally say "go ask so-and-so, she's over at the post

office just now". It is also a way of observing who in the community was considered (by the individuals and groups asked) to be qualified to give their input on the topic. It was occasionally a challenge to assure potential participants that they were qualified since only opinions based on their own experience was being sought.

The very act of doing field interviews is a form of a shared experience that can elicit trust (Neuman, 2003). Interview surveys, when administered in person, yield a high response rate, both overall and also to individual questions, because the interviewer has the opportunity to probe vague answers and to clarify any confusion within the questionnaire (using formal specifications) (Babbie, 1990). Pre-testing can eliminate much confusion but likely not all, especially when interviewing people across a wide spectrum of age, relationship to the topic, and experience with the topic. In addition, an interviewer can observe while conducting the interview -- something very important in focus groups when there is a lot of interpersonal communication going on and perhaps a few 'nodded assents' that might otherwise be missed.

The research methodology literature admonishes that "listening is the most important skill in interviewing" and the interviewer must remain aware of the process and substance while doing interviews (Seidman, 1998, p. 63). It is important when conducting interviews outside of one's culture to be aware of social norms and not overstep them. For example, people may not have the time to devote to the length of interview being expected or perhaps would not feel comfortable in a focus group setting if the topic seems too personal to them (Ekho & Ottokie, 2000).

Sample size is not a fixed number but rather is based on the concept of 'saturation': either knowing the subject has been exhausted to where "nothing new is being gleaned" or because there have been "sufficient numbers to reflect the range of participants and sites so that others outside the sample might have a chance to connect to the experience of those in it" (Seidman, 1998, p. 48).

Organizing the data into categories and classifying them is called 'coding' (Seidman, 1998). Several readings through all of the interviews / data can help sort the categories into these codes, some will naturally be dead-ends and some will show strong connections (Seidman, 1998). Coding "involves reducing a wide variety of idiosyncratic items of information to a more limited set of attributes composing a variable" (Babbie, 1990, p. 209).

The nature of the data collected can guide the design of the analysis (Krathwohl, 1985). Although the scope of analysis was anticipated in this thesis research, the style and breadth of the data analysis tables were designed after reviewing the interviews and coding them for themes.

Finally, just as the literature demonstrates that the communication of a health message is not complete until the results are evaluated, research is not complete until it is disseminated (Berg, 2004). Many people consider the thesis to be the final product of research and, while required by academic institutions as per a degree programme, in the case of community research there may be other 'deliverables' or expectations. Further communication may or may not be required as per any agreements, but researchers are often asked about what will happen with the research after they leave. They may be encouraged to give the research results back to the community in a way that is meaningful to the community, such as a radio update, a one-page plain language summary for their town newsletter, or any other means that may be suggested by individuals or groups in the community. I intend to return the research data to the community and the participants , by first consulting with community members including my community-based thesis committee member, to do so in a way that is acceptable to them. Some possibilities that have been mentioned already include as a radio question and answer session and a short article in *Avativut Newsletter*.

4.3. RESEARCH DESIGN AND APPROACH

The purpose of this research was to explore the key factors influencing the communication of environmental health risk messages with an identified sensitive— at-

risk—population in an Aboriginal setting. The research was carried out by conducting a comprehensive literature review, designing an analytical tool and by new research / data collection in the form of a case study using focus groups, key informant interviews and document collection and review.

The literature review on risk communication and health promotion theory, as well as specifically on communicating about environmental contaminants and health, influenced the scope and topics of the field research. The next phase examined the current state of communication on these topics in the case region. This included a review of the current and past context in which this information has been communicated in the region. These two steps of the research design helped form the questions for key informant interviews and focus group discussions in the case study.

I had the opportunity to visit the community of Nain in 2004 and it was here that the research idea developed in consultation with representatives from ITK, NCP, my thesis committee and, most importantly, the community. In preparation for doing data collection in the community, I started to discuss the research idea with appropriate community agencies, such as the Labrador Inuit Association and specifically their research office, in 2004. Please see Section 4.5 for a full description of the process followed to gain approval to conduct the research.

The field data collection component of the research was carried out in March 2005, after several months of communication with LIA Research Office, who let the community know the research would be occurring in the Spring. I spent three weeks in the Nunatsiavut community of Nain to conduct face-to-face key informant interviews and focus groups. This relatively short time-frame was made possible due to the front end work of preparation and enhanced by the community's familiarity with me from previous work in the community. Additional interviews were carried out in Happy Valley-Goose Bay and by telephone with other key-informants, when necessary. Interviews assessed the venues of information dissemination, and their effectiveness for communicating this kind of information to specific groups. Interviews were conducted in a semi-structured

manner, with some open-ended and semi-directed questions allowing for the greatest range of answers and information dissemination to the interviewer.

The key informant interviews were with experienced individuals in public health and health education fields (e.g. public health nurses, community health workers) and others who dealt with nutrition / environment in the region and case community. All individuals had a number of years of experience professionally and personally working on this topic in the region. The focus group(s) were with women of childbearing age (from 13-45) residing in the case community. The interviews were semi-structured but open ended, following a set of questions to elicit answers within several themes present in the analytical framework and allowing for extensive narrative. They were guided but with ample room to explore new areas of importance to the interviewee or interviewer as necessary.

Topics investigated through the field research included:

- What are the existing health beliefs and contaminant risk perceptions in this group?
- What misconceptions about this topic currently exist among the target population?
- What factors most influence their food and health choices?
- Where do members of the target group get health-related and other information?
- What are their concerns (related to health) now?

Note that I did not use the phrase environmental contaminants, or other related terms such as 'POPs' (Persistent Organic Pollutants), 'chemicals', or 'pollution' with the focus group participants unless they used it first. If they used the term, they were asked to clarify what they meant. This was done in an effort to assess their level of concern over the topic, as well as to avoid introducing concern about it simply by bringing it up.

4.3.1. CASE STUDY

Based on the framework formed from the literature and contextual documentation, data was collected via 'an examination of individuals who can contribute to the evolving

theory' (Miles & Huberman, 1994, in Creswell, 1998) due to their expertise and 'participation in a process' (in this case, contaminants communication and food choices) (Creswell, 1998). Methods of data collection from these individuals included focus group discussions and key-informant interviews (Creswell, 1998).

Case studies look to establish patterns and correspondence among groups of data as presented in a naturalistic setting (Creswell, 1998). The case study is an ideal way to examine what the literature and data mean in context, in person and in the present scenario. In this respect, this thesis strives to examine the setting in which the theory was born and will continue to grow and change. To this end, it applied risk communication and health promotion theory to the issue of communicating about contaminants to young Inuit women in Nunatsiavut.

Embedded case studies allow investigators to use both qualitative and quantitative data in their research. Documents, interviews and other sources of information add context to the inquiry (investigation of phenomena) and potentially validate the theory that underlies the data collection and analysis (Yin, 2003). Case study "benefits from the prior development of theoretical propositions to guide data collection and analysis" (Yin, 2003).

To understand the communication pathways and the location in each organization of communicators (actual and potential), I reviewed a variety of documents. For example, to understand the structure and inter-relationships of the local organizations that might be delivering health information or services, the newsletters, annual reports and websites (if existing) of each organization were reviewed. These include the Labrador Inuit Association (LIA), the Labrador Inuit Health Commission (LIHC), Jens Haven High School (subject and teacher list), OKâlaKatiget Society, and Nain Town Council.

4.3.2. KEY INFORMANT INTERVIEWS

Key informant interviews were carried out with a variety of people in the health and environment field (e.g. public health nurses, community health workers) and those who dealt with nutrition / environment, located in or working with communities in

Nunatsiavut. Based on previous experience of the region and communications networks and regional organizations, it was expected that approximately seven to ten in-depth, open-ended, semi-directed interviews would be conducted with key informants. There were 17 key informants identified through a purposive sampling protocol in total. Each participant was interviewed once for approximately 0.5-1 hour. All of the interview research occurred at a mutually agreed upon location within the community, usually a quiet office in their place of work or other public place.

The direction and scope of the interviews varied depending on the informant's knowledge and background. Interview questions were designed to obtain informant's personal knowledge and perspective. The questions were intended as a general guideline for directing the interview process and varied depending on the information the informant conveyed. As well, the interview questions were pre-tested and revised prior to the commencement of the field research interview process.

Two methods were used to recruit key informants. Initially, names of potential informants were sought within likely occupations (e.g. public health offices in Labrador, communications officers for key organizations, etc.). The project was introduced to key organizations (Labrador Inuit Association and Labrador Inuit Health Commission) via both formal means (emails and letters) and informal visits to offices. Individuals were invited to participate and suggestions for other key informants were sought. Other groups were contacted by phone or email to elicit the names of potential informants. Second, additional informants were identified using 'snowball' sampling—first identifying people with relevant characteristics for the study and interviewing them, then asking them to suggest other people with these attributes (Sullivan, 2001; Berg, 2004). The potential informants were contacted by telephone and / or email to request their participation and to ascertain whether they had potentially relevant knowledge to provide. One of the risks of snowball sampling is that knowledge may be obtained from participants with similar opinions and associations, thus possibly biasing the results. Using the key-informant criteria identified above (see Section 4.3) a purposeful process for participant

identification and recruitment was established which controlled for possible biases associated with use of only one sampling technique such as snowball sampling.

Qualitative answers to interview questions were organized into categories or themes for analysis. Coding was based initially on answers obtained during pre-tests and changed and evolved as new themes became apparent throughout the interview process. Interview data was aggregated for analysis. If consent was given by the informant, individual quotes from the interviews were allowed to be used in publications, as long as their accuracy was ensured and they did not compromise confidentiality (where anonymity had not been waived).

During initial contact with potential informants, the identity and affiliation of the researcher, the purpose of the study, who was qualified to participate, and the other issues outlined in the consent form were communicated. If the individuals who were contacted qualified and agreed to participate, an interview time and place was arranged. If these individuals did not wish to participate or did not qualify, they were asked if they knew of anyone else who might have knowledge on the topic. Face-to-face interviews were conducted at a location in the community acceptable to both participant and interviewer (e.g. informant's home or workplace, community centre). Before an interview, the consent form was reviewed with the informant and they were given the opportunity to ask questions and to consider whether they wished to participate. Informants were only interviewed if they signed the consent form. A copy of the form (including pertinent contact information so that the participant may contact the researcher) was given to them for their records. Informants were informed that they were free to refuse to answer questions or withdraw from the study at anytime. No compensation was offered to participants.

Interviews were audio-recorded with the permission of the informant and I also took written field notes. Field notes were typed following each interview and I transcribed the recorded interviews. Audio recordings and transcriptions were initially reviewed by the thesis committee for supervisory purposes. This entire process follows guidelines set out

by the Human Research Ethics Board of Dalhousie University (See Section 4.5 for more on the research ethics processes involved in this thesis research).

Topics discussed included personal health risk perception, nutritional and health knowledge and awareness (i.e. perception of benefits of various foods, contaminants understanding, prenatal nutrition information), communication pathways (including current and possible communication networks). The topics of northern contaminants, wildfood, Inuit diet / nutrition, women of childbearing age, risk communication, and Labrador Inuit health issues were all possible topics of discussion, guided by the open-ended interview process. Please see Appendix B for the interview questions.

4.3.3. FOCUS GROUPS

The focus group participants were members of the target group (women of childbearing age) because they are the key communication 'recipients'. At the time of focus group recruitment, the study was announced in the community via local and regional radio. In addition, posters were printed in English and Inuttitut and placed prominently throughout the community (please see Appendix C for print versions of the posters) and "word of mouth" was encouraged. Further individuals were identified by the initial respondents and were then contacted by telephone or in person (face-to-face) and asked to participate in a focus group discussion. Recruitment was done via random selection among the target group members responding to the study. The focus group(s) with women of childbearing age included high school students, young mothers; young women who were not mothers and those who were pregnant with their first child. There were three focus groups, comprised of 2-5 participants. The focus group discussions were approximately one to 1.5 hours in duration. The focus groups occurred at a mutually agreed upon location within the community.

Once the focus group participants were selected, the objectives of the study were discussed with them. Any questions were answered and / or clarifications were made and a time was established for their focus group discussion. After participants arrived for the focus group discussion, the goals of the project and the specific discussion were

reiterated. I led them through the consent process individually before assembling as a group, and signed consent was requested before proceeding. I reviewed the consent form with them, ensuring that any questions were answered regarding consent for the work. I asked for permission to audio record the interview to ensure accuracy of data collection, however it was explained that if permission was not given written notes could be taken. Audio recordings and any notes from the interviews were kept, alphanumerically coded in order to protect the name of the participant, separated from the consent forms in a locked cabinet in the office / home of the researcher. Every effort has been made to ensure confidentiality.

Topics discussed included personal health risk perception, nutritional and health knowledge and awareness (i.e. perception of benefits of various foods, contaminants understanding, prenatal nutrition information), and preference for information reception (communication pathways, including current and possible communication networks). Please see Appendix B for the focus group questions.

4.3.4. DOCUMENT COLLECTION

A review was carried out on the communication materials produced and / or distributed in the community on the subject of health issues, environmental issues, harvest and hunting information (such as restrictions on shellfish collection and ingestion in certain areas due to pollution), prenatal and postnatal nutrition and health, school curriculum or materials related to health, environment and/or nutrition. This included posters, pamphlets, fact sheets, classroom assignments and newsletters. This was done in order to assess communication in the community on related health topics, and to identify the existence or absence of the important communication criteria identified in the framework.

4.3.5. PARTICIPANT OBSERVATION

In addition to taping the interviews, I always took notes and did a brief written 'entry' after interviews were complete, highlighting areas that seemed to be of special importance to the interview participant or noting other things observed. In addition, I

observed displays or posters in the community relating to health, nutrition, risk messaging on a variety of other topics (such as smoking or snowmobile-related safety).

Participant observation can be used to start the process of noting emergent themes and highlighting things being said that are especially cogent. It also was a way of capturing the 'Eureka!' moments that occurred during the interviews, when it was not so much exactly what was said as the ripple effect upon my thinking.

4.4. DATA ANALYSIS

From the literature, characteristics / criteria were identified that should be present for 'good' (clear, and ultimately effective) risk communication. Data was collected and assessed to answer the question of whether or not these criteria were met in regard to communication on environmental contaminants, food, and health issues with young Inuit women in Nunatsiavut.

The interviews were transcribed (into computer) verbatim, and hand-codified and analyzed by emergent themes in the framework. No software was used for this research analysis, due to the narrative style of the interviews and my preference. Eight thematic tables represent the total data collected for this thesis (see Appendix E). They are organized by theme or category in the framework (e.g. 'Message') with bulleted themes, and the related interview questions. Each of the four sources of data collection are included (if applicable) in each theme (key informant interviews, focus groups, documents that were available in the community and participant observation notes).

Interviews – key informant and focus group data – were analyzed via content analysis. Final analysis of interview data was via coding relating to the responses given by participants. The data was reviewed, disclosing patterns or trends for the same topic across interviews or focus groups. The construction of categories and grouping of related data relied on interactively adjusting categories as the transcripts are reviewed. Identification of keywords and themes informed the manner in which the data is presented in the thesis (Creswell, 1998, 2003).

The research data was organized via categorical aggregation and an establishment of patterns (when seen). The interpretation was then informed via the data collected from the case study (Babbie, 1990; Creswell, 2003). A narrative analysis augmented by tables and figures comprises the final thesis document (Creswell, 1998). Final analysis of the research has resulted in this thesis and applicable recommendations for an improved communication strategy (and tools) for health promotion among an 'at-risk' or target group (women of childbearing age) around the issue of contaminants in Nunatsiavut (and with applicability to other, analogous contexts).

4.5. ETHICAL CONSIDERATIONS AND ETHICS APPROVAL PROCESS

In accordance with the encouraging and recent trends toward better research involvement with Inuit and other Aboriginal communities, and greater communication and ethical responsibility by researchers, I made every effort to be sure that the community would be aware of what this study was about and where to get further information for the duration of the research. I followed guidelines set out by Labrador Inuit Association Research Office as well as the Human Research Ethics Board of Dalhousie University (Tri-Council Policy Statement), e.g. the community knew where to reach me before, during and after the study via the LIA office.

The collaborative guidebook on research, *Negotiating Research Relationships with Inuit Communities* has a section on communication that stresses how pivotal an effective and appropriate communication strategy is from the outset of a research project and how important is it is to determine the level of involvement the community wants in various stages of the proposed research (from design though fieldwork to interpretation and results dissemination) (ITK & Nunavut Research Institute [NRI], 2007). This study worked to uphold the principle "that northern communities are involved in, and benefit from, research" and to "participate meaningfully in research" in their community (ITK & NRI, 2007, p. 1). Every year, hundreds of researchers descend on northern communities to conduct research and "Inuit are beginning to say that they have had enough of being studied by academics who show them a lack of respect" (Oakes & Riewe, 1996, p. 72). Now that land claims settlements are complete in all four Inuit regions, Inuit have a

'major say' in the research policy and procedures that govern the management of a huge part of Canada (Oakes & Riewe, 1996). Aboriginal community involvement can and should no longer be an after-thought in the research design process.

Ethical considerations are a critical step in any research to be undertaken in Inuit (or any Aboriginal) communities, and the institutions and governments with jurisdiction over any part of the research location or topic may have unique research guidelines. The university is more likely to approve the research based on the researcher having gained the community / government's approval, and the reverse may also be true. In any case, following the guidelines and keeping the three-way communication both clear and up-to-date is imperative. This part of the research design and process simply cannot be glossed over or hastened.

For this thesis research, ethics approval was gained from both Dalhousie University and the Labrador Inuit Association (LIA). This was, admittedly, a balancing act of following the university guidelines while simultaneously pursuing the research permission from LIA. This was somewhat eased by LIA's familiarity with me (from two summers of previous work in the community) and their existing partnership to do research on this topic with Inuit Tapiriit Kanatami under the Northern Contaminants Program. Please see Appendix D for ethics approval documents.

It is worth noting that one of the additional steps taken to link this research with the community was to ask an Inuk elder to be on the thesis committee, providing advice, perspective and connection to the community while the research was conducted and giving input into the thesis. Usually, as long as a student fulfills the university requirements for certain academic representation on the supervising committee, there is the opportunity to invite participation from advisors outside the university, and in fact outside of academia, especially when they are considered to be have expertise on the topic of study. In the case of this thesis, the Inuk I asked to participate has tremendous experience with regional communication pathways. She was for many years the Executive Director of the OKâlaKatiget Society (which provides regional, native

communications for Nunatsiavut) and has long been a keen listener to community concerns.

I strongly believe that individual researchers need to wholeheartedly engage in the ethical process set out by any Aboriginal community or governing body that their proposed research will involve or concern. The importance of an ethically sanctioned and otherwise appropriate, culturally considerate research relationship cannot be stressed enough and I think that this consideration was especially important for this research, due to the fact that this thesis explores health risk communication and is, in part, an assessment of previous failures in 'best practices' of communication with Inuit communities.

4.6. ROLE OF RESEARCHER

Before returning to graduate school, I worked in Nunatsiavut with a non-governmental organization as environmental educator / waste management summer intern on garbage and recycling issues. While there, I saw that the community was grappling with many unanswered health and environmental concerns. From this experience I wondered, "As an outsider, what can I do to help"? I returned to university, determined to work on a thesis with local relevance and practical applications. In this regard, I hope I was at least in part successful.

The motivation to 'help' was a potential concern when trying to eliminate bias in the thesis research. Some of the built-in steps taken in carrying out the research were there, in part, to help reduce such bias, e.g. one of my supervisors listened to the recordings early in the process of interview data collection. This process helped curb any tendency for the questions to be too 'leading', for example. The opportunity of working closely with the community organizations and of having input from a local elder helped keep me 'grounded' and kept a balance between my personal motivation, the practical task at hand when in the community ('data collection' in the form of interviews and focus groups) and the academic process (Cardinal, 2004).

Since "good models of qualitative inquiry demonstrate the rigor, difficulty, and time-consuming nature of this approach" (Creswell, 1998, p. 9), through this research process, I hope I have demonstrated my adherence to the best characteristics of good qualitative research.

CHAPTER 5: RESEARCH RESULTS

5.1. INTRODUCTION

In this chapter, the analysis of the data is presented. The data collected includes narrative from interviews with key informants, focus groups and the content of documents that were collected in the community. The data is presented under headings reflecting the framework categories that were developed from the literature review.

From the literature, characteristics and criteria were identified that should be present for 'good' (clear, and ultimately effective) risk communication. Data were collected to assess whether or not these criteria were being met in regard to communication on environmental contaminants, nutrition, and health issues with the target group of women of childbearing age in Nain, Nunatsiavut. The data analysis framework categories are listed in Table 1.

Seventeen key informant interviews and three focus groups were conducted for this study. The interviews were carried out in Nunatsiavut in March of 2005. Please see Table 3 for a break-down of the characteristics and area of experience of the key informants and focus group participants. The interviews were analyzed by the themes above. The documents were evaluated based on the same criteria. A full data table for the documents is found in Appendix E. Please see Table 4 for a coded guide to the documents discussed here in the research results.

Table 3: Summary of Characteristics of Individuals Participating in Interviews or Focus Groups

INTERVIEW TYPE	PARTICIPANT GROUPING	NUMBER OF PARTICIPANTS	GENDER	AREA OF EXPERIENCE / CHARACTERISTICS
Key informant	Educator / communications	7	2 male 5 female	School teaching (science / health topics), youth work, communications, family centre work
	Healthcare worker / health educator	6	1 male 5 female	Direct client care, baby care, CPNP, public health, communicable diseases, school visits
	Health administrator / director	4	4 female	Regional core program delivery, environmental health, diabetes services, food and nutrition services for daycare / other facilities
Focus group	High school WCBA	4	4 female	Aged 15-17; not yet mothers
	Mothers-to-be (pregnant)	2	2 female	Age 25-28; First pregnancy
	Non-mothers	3	3 female	Age 18-24; not yet mothers
	Mothers	2	2 female	Over age 25; 1-4 children

Table 4: Documents Collected in Community

CODE	DOCUMENT TITLE
D1	Avativut Newsletter
D2	Babybuilding... Breastfeeding: A Time For Good Choices
D3	Baby's First Year
D4	Breast Compression
D5	Breastfeeding
D6	Breastfeeding Handbook
D7	Bottlefeeding Your Baby: A Time For Closeness
D8	Building A Healthy Baby
D9	CACAR II CD
D10	Canada's Food Guide
D11	Cupfeeding Guidelines
D12	Eating For The Good Of Your Health
D13	The Facts About Breast Milk
D14	Feeding Your Child Ages 2 To 5
D15	Feeding Your Toddler: A Guide To Eating Well For 1-2 Year Olds
D16	Finger Feeding
D17	5 To 10 A Day: Are You Getting Enough?
D18	Food Safety Tips For Eggs
D19	Four Star Lunch; Our Lunch Needs
D20	Healthy Eating; A New Life
D21	Healthy Mom, Healthy Baby
D22	Love Your Heart: Encouraging Healthy Inuit Hearts
D23	Making Children's Lunches...Easier To Swallow
D24	Revised Recommendations For Breastfed Infants
D25	Saglek And Your Health
D26	Senior Health: Eating To Stay Healthy
D27	Slow Weight Gain After The First Few Months
D28	Snacks Which Are Safe For Teeth
D29	Traditional Foods Calendar 2004
D30	Traditional Labrador Inuit Foods /Piusitukaujutut Labradorimiut Inuit Nikingit
D31	Why Is Nutrition So Important Anyway?
D32	You, Your Child, And Food: A Guide To Eating Well For Preschoolers (Age 2-5 Yrs)
D33	ITK Posters "Wildfood Is Still Good For You" Series
D34	Aboriginal Health (Manual Used At Clinic)
D35	Canadian Prenatal Nutrition Program (Manual Used At Public Health)

The data gathered and analysed for this thesis was grouped into eight categories as refelected in the analytical table. Each of the four sources of data are represented (where applicable) in each theme (key informant interviews; focus groups; documents that were available in the community and participant observation). Please see Appendix F for full research data tables.

Due to the narrative nature of some data, more information was discussed than the thesis topic covered, and some misinformation was invariably given. Where possible, the correct information was obtained but the interview transcript was done verbatim. This type of information can indicate a misunderstanding that is a valuable part of the data, or may simply be an inconsequential error by the participant (e.g. referring to LIHC instead of LIA).

Every effort was made to allow the data to emerge and to avoid weighting the data. For example, if there were numerous mentions of one issue and few of another, it was not assumed that one was more important than another, or more representative. This research, since it is a case study with community participants, is also a 'snapshot' in time, some responses would likely differ at another time or with other respondents.

5.2. DATA ANALYSIS FRAMEWORK CATEGORIES

A wealth of information about contaminants, food, and health has been released in Nunatsiavut in recent years. The analytical framework provided a method through which to analyse the system and processes for environmental health risk communication in the case study community. The data was assessed for its evidence (or lack of evidence) of these framework themes and sub-elements. When I found no evidence from any of the sources of data gathered for a particular element, this is stated, and described the absence of this element of the risk communication process at the time of the study.

5.2.1. MESSAGE

- Is the information balanced: does it include both risks and benefits (e.g. gathering and consumption of wildfood has both risks / benefits)?

Several of the focus group participants (members of the target group for optimal risk communication on this topic) specifically mentioned information that they saw or heard about Saglek. Their impression was that this information was a "warning" or advisory and explained the risks involved in eating wildfood from this area. Meanwhile, most of this group expressed the opinion that wildfood in general is a good source of healthy nutrition and that they do eat it. (See Appendix F, Category 1).

The key informants (educators, administrators and communicators in organizations with at least a partial role in health-related communication) indicate that they are providing the information in a balanced manner, but noted "it is not as simple as 'wildfood is good for you'." For example, what parts of the food are consumed and how it is prepared is part of the issue, too (e.g. consuming caribou meat that has been cooked in pork fat has "risks" that are not captured in messages promoting caribou as a nutritious, healthy, low fat wild meat choice). (See Appendix F, Category 1).

An example of well-balanced risk communication materials on this topic included Labrador Inuit Association Research Office's newsletter, *Avativut* (D1), which contains messages about the nutritional value of wildfoods as well as the suggested limits to certain types of wildfood sources (e.g. parts of animals that should be consumed less when pregnant, etc.). Most of the materials about breast-feeding, on the other hand, simply promote it as a healthful activity and do not discuss any potential risks (related to wildfood and contaminants), such as the concept of offloading contaminants. (See Appendix F, Category 1).

In summary, there appears to be an effort to give out balanced messages on this complex topic, but the result is that the recipients of the messages on contaminants and wildfood show some confusion over "the bottom line" around consumption of wildfood(s)—is it safe to eat? Is it not safe to eat?

- Is it at an appropriate language level for target group(s)?

This question was aimed at determining if the material in the community was understandable to the target group. It allowed for a subjective assessment of 'appropriate language level' by the respondent. The document review allowed for confirmation of what terminology and language level were used.

Six key informants said that this age group needs a targeted message and that this might affect choice of language level in messages. Most thought that it was important to "reiterate" messages of risk and "get them to really understand the full implications of diet choices". Most key informants were more concerned with the messages being locally relevant than by actual language level. (See Appendix F, Category 1 and Category 2).

Although this question (above) was not asked directly to the focus group, they commented on school curricula and other programmes in school that were presented using props and slides of photos as being more interesting than lectures. (See Appendix F, Category 1).

Of the documents that were collected in the community, six had language level that was reported to be understood by the audience (D1, D2, D3, D4, D22, D29), e.g. *Avativut Newsletter* (D1) by LIA Research Office was mentioned as useful by the focus group participants. Two young mothers-to-be mentioned *Baby Building...Breastfeeding: A Time for Good Choices* (D2) as useful. Six other documents had fairly complex language level (D5, D9, D13, D16, D24, D27), and three of these were standard handouts about breastfeeding from the PH office. In addition several were very lengthy, a quality that was universally disparaged by the focus group participants and others were seen by them as "old", not using a modern style or "words" (old-fashioned terminology) and were not up-to-date. The most easily understood documents did not rely solely on words but used images (photos or illustrations) to convey meaning. One of the most commonly displayed examples was *Traditional Labrador Inuit Foods / PiusituKaujutut Labradorimiut Inuit NiKingit* (D30) which used words, colour-coding and photos to communicate concepts around the important food groups and nutrition. This poster was frequently mentioned and seemed to especially appeal to the focus group participants. (See Appendix F,

Category 1).

The information found in many prenatal-care oriented pamphlets from the public health office was often very brief and not in adequate detail, while other handouts were very long and seemed overwhelming to the focus group participants (e.g. two mothers-to-be commented on both the lengthiness and lack of useful information contained in some of the booklet-style handouts they had been given, without further opportunity for clarification). (See Appendix E).

- Is it clear what the intent of the message is (e.g. is it a health advisory)?

"It is not always as easy as 'native food is good for you'", as one key informant put it. Key informants felt that people were aware of advisories, understanding that they should not hunt, fish, or gather certain wildfood species near contaminated areas (e.g. Saglek).

Focus group participants who were still in high school said that classroom messages around health were clearly meant "to tell us how to raise / take care of a child" and to "show you how to eat healthy" and "all wild meat" (versus fast food). Saglek was mentioned by one focus group participant and she clearly understood the messages around it to have been an advisory to "not hunt or eat" wildfood from there. (See Appendix F, Category 1).

By all accounts, a good example of a document found in the community at the time of the data collection was *Saglek And Your Health* (D25), which clearly states that it is an advisory; what this means and also which wildfoods are safe. All other documents were educational and not advisories. Despite the educational nature of most of these other documents, many community members seemed to think that all messages containing wildfoods information related to the contaminants issue and may have seen any messaging on this topic as an advisory (personal observation). (See Appendix F, Category 1).

- Is the source (of the material) identified clearly?

The understanding of the source of a message is important for the recipient to understand the motivation of message (Is it an advertisement? An advisory? A health promotion message?) Identification of the source is important so that recipients can ask further information or clarification if needed (e.g. a pamphlet on nutritional guidelines for pregnant women may not indicate what the best sources of theses nutrients are within the options in the community).

Most key informants indicated that the information they distribute had identifiable sources. The public health office and LIHC did hand out a large percentage of material that was not produced by them. Schoolteachers used the widest range of source materials (e.g. DVDs and websites; LIHC staff and public health nurses as presenters) to support topics in the health curricula. (See Appendix F, Category 1).

Thirteen documents did not have sufficient identifying information on them and thirteen others had clear identifying features, while four said "to contact nearest office," an impractical suggestion in the context of Nunatsiavut, where this would mean a long-distance call or visit to St. John's, Newfoundland. (See Appendix F, Category 1).

When 'message delivery' is done in person (e.g. via a presentation) focus group participants generally identified the person and the agency as the communicator (e.g. "Jane Doe of LIHC did a presentation in school"). They were not clear who was presenting at an Open House they mentioned (it was ITK and NCP, hosted by LIA), which could be a result of lack of clarity by the communicators, unfamiliar agencies or multiple communicators. Focus group participants generally did not mention sources of print material with the notable (and repeated) exception of the LIA Research Office materials.

- Is the information available in an appropriate local language / dialect?

Key informants said that "there is about half-time translation" meaning that by their estimate half of available materials were in Inuttitut. They generally acknowledged that there was limited information available "that is using our culture, point of view, language, way of life". On the other hand, these educators / health professionals also indicated that to reach this target group material does not need to be in Inuttitut. Meanwhile, interpreters were always available for patients during clinic visits. (See Appendix F, Category 1).

Nearly all OKâlaKatiget radio broadcasts are in both Inuttitut / English. There was no evidence of regularly scheduled health-related programming, and health messaging usually occurred when visitors to the community were presenting information related to a study, or it was an announcement of a new programme such as an exercise class. Much information in the community passed from person to person via word of mouth; if one person heard an announcement, advisory or programme on the radio, they often communicated about it with others. For example, bilingual posters around town allowed for elders to see what this thesis study was about and possibly talk about what was discussed with their younger relatives who participated in it.

None of the focus group participants spoke Inuttitut fluently, though several said they understand some of the language. All of them reported that they use only English to communicate.

Documents collected did not support the 'half-time' translation approximation: only six documents collected were in Inuttitut, and these were all locally generated materials. The only other documents found in the community in Inuit language were from other regions or federal-level Inuit organizations (e.g. Pauktuutit, ITK). (See Appendix F, Category 1).

5.2.2. CONTEXT / FRAMING

- Does message include (or somehow take into account) local perspectives?

Key informants and focus group participants say that most health messages do not

include local perspectives in any way. "Translation was always an issue...using our culture, point of view, language, way of life," said one respondent. Aside from locally organized presentations, most messaging came into the community from elsewhere. As evidenced by the printed documents collected in the community, most originated from outside the Nunatsiavut region and few of these were adapted to the local perspective. (See Appendix F, Category 2).

An outstanding exception was the locally produced *Traditional Labrador Inuit Foods / PiusituKaujutut Labradorimiut Inuit NiKingit* (D30), which was produced as a (both large and small) poster with photo images of local customary foods and using an adaptation of standard food guides (such as the *Canada Food Guide*) with categories linked to food types. It used images and descriptors that were relevant to the people using it (e.g. photos of wildfood animals 'For Strong Muscles', a.k.a. protein). In addition, the focus group participants (young women) mentioned *Avativut Newsletter* (D1) from LIA research as incorporating the local perspective. (See Appendix F, Category 2).

- Is it appropriate to local context (e.g. takes into account local customs, reality of food access, uses imagery relevant to culture, etc.)?

Very few messages were in any way related to the local customs and preferences or took into account the realities of food access. An exception (see above) was the traditional Inuit foods poster that was developed by the LIHC with the community to remedy the gap in culturally relevant food guide / food pyramid type of information. Many of the materials found in the community at the time of data collection were simply reprints or photocopies of material from sources well outside the region. A health educator, when interviewed said, "people get turned off by material (not from the region)". (See Appendix F, Category 2).

- Is the target group's existing risk perception on this topic known and considered in the message development and delivery?

One health educator said, "Teenaged girls don't want to hear it (information on health / risk)...they think they are 'invincible' and do not understand health risks." (See Appendix F, Category 2).

No evidence was found that the target group's understanding of the issue was examined, measured or in any way 'asked about' prior to dissemination of the (contaminants) materials.

5.2.3. PATHWAYS / NETWORKS

- Is message delivered via pathways / networks used by target group?

After discussions with focus groups of the target audience for messaging, it became evident that very little use is made of the communication pathways that they frequent. Many of the high school aged young women use the Internet, for example, to do research for school assignments (e.g. they specifically mentioned accessing Health Canada's website) or to look up information out of their own curiosity. None of the communication materials about health risks and benefits related to contaminants and food were intentionally disseminated via this medium. Furthermore, "young people listen more when it's coming from someone of their own age," said one respondent. (See Appendix F, Category 3). Note: Chapter 6 will explore some suggested pathways and media.

- Is the message delivered taking into consideration competing messages on this topic from other sources (e.g. does the communicator do anything to take this into consideration, such as correct other messages)?

This question is motivated by the community's concern over previous contaminants messaging that has sometimes been alarming to Inuit in other Arctic communities and regions.

There was no evidence of this from any interviews, except for a mention of the regional culture camps that, in part, emphasized the cultural value of wildfood and taught skills

related to hunting, skinning and cooking meat. They were not designed as a direct response to discussions (or risk messages, such as the advisory on Saglek) around contaminants, but were meant to support continued consumption of wildfood. (See Appendix F, Category 3).

Two notable exceptions were in documents collected in the community. One was the *Avativut Newsletter* (D1) and the other was a poster from Nunavik that was found in the community, related to breast-feeding and contaminants: *Country Food, Mothers' and Infants' Health* (Nunavik Regional Board of Health and Social Services, 2003). Both were good examples of information released (at least in part) to clarify previous or competing messages. (See Appendix F, Category 3).

- Are the tools in locations that are accessible by target group(s)?

All of the educators felt that "information is available in many accessible locations" yet a few of these people admitted that the target group is not accessing it. Some of the target group participants noted the presence and availability of posters and pamphlets in public locations, such as the post office, but as one high-school aged respondent put it, "you don't see people standing around and reading the walls" to get information. Several mentions were made by all categories of respondents about posters getting ripped down and things ending up in the garbage quickly as being a hindrance to the usefulness of posting information in a public space. (See Appendix F, Category 3).

5.2.4. COMMUNICATORS

- Is the communicator easily identifiable (e.g. media, academic, government, local agency, internet, family, friend, health professional, teacher)?

In the case of in-person presentations, if the presentation was coordinated by a local agency, the high school students could clearly identify what the presentations were about and who was presenting them (e.g. public health nurse on risks of smoking). There was less clarity over visitors to the community and what they were doing (e.g. there was some

confusion over a Community Tour on contaminants and health with representatives from Inuit Tapiriit Kanatami, INAC/Northern Contaminants Programme and researchers). As for Internet sources and television, the high-school aged group also made a distinction between 'educational' content and 'commercials'. Many of the available printed materials had no identifying address or contact information on it, making it impossible to know whom the communicator was. (See Appendix F, Category 4).

- Is the messenger a recognized and trusted source of information for the target group?

Local presenters of health-related information (e.g. nurse, science teacher) seem well received and trusted by the target group. Written materials that were not generated within the community were never mentioned by the target group, whereas *Avativut Newsletter* (LIA Research Office) and the LIHC-produced *Traditional Labrador Inuit Foods / PiusituKaujutut Labradorimiut Inuit NiKingit* posters were well received and seemed to be trusted sources of nutritional and environmental information. Printed materials were generally considered to have been 'endorsed' by the person who handed them out (public health nurse, etc.) and were therefore trusted. (See Appendix F, Category 4).

- Is the source (of the material) identified clearly?

Only 13 of the 33 documents collected were clearly identified as to sources (e.g. Pauktuutit, LIA Research) and with complete and usable contact information (e.g. Internet web addresses and toll-free telephone numbers). One reason the lack of identifiers is of concern is that it might preclude the recipient from obtaining further information or clarification or perhaps even understanding the motivation behind the message (e.g. nutrition tips for during pregnancy vs. advertisement for prenatal vitamins). In addition, the lack of a date on material may also be of concern since newer, updated or preferred messages might have been released, yet the older message could still be circulating information that was incomplete, outdated or otherwise incorrect. (See Appendix F, Category 4).

5.2.5. MATERIALS / TOOLS / PROCESS

- Are the materials / tools used by the target group(s)?

Only a very few of the materials were specifically mentioned by the target group as being useful. In particular, first-time mothers-to-be referred to some of the pregnancy-related materials they had accessed as being helpful to them, when available. It should be noted that this group mentioned some difficulties accessing the public health office and said that there were no pre-natal classes available to them during their entire pregnancy (at the time of the research interviews). Aside from this, the only other mentions of materials were LIA Research's *Avativut Newsletter* and the LIHC poster *Traditional Labrador Inuit Foods / PiusituKaujutut Labradorimiut Inuit NiKingit.* Key informants commented that although printed materials "are easy to access" they often end up in the garbage; I also observed that the floor of the post office was quickly strewn with pamphlets on almost any topic when they are delivered to community members via mailboxes. In addition, many potentially 'useful' materials remained undistributed, in their original boxes at various offices in the community. (See Appendix F, Category 5).

- Does the process provide for two-way communication (e.g. presented in a format that allows for a response, etc.)?

In-person presentations (e.g. prenatal classes; Open Houses by LIA; presentation by public health nurse at school) allow for the possibility of two-way communication, although the opportunity for and efficacy of this was not measured by this research. Most of the printed materials did not provide for two-way communication, since the source of the message was not clearly identified or the materials did not contain sufficient contact information. (See Appendix F, Category 5).

- Is the communication material pre-tested or field tested (each event)?

No evidence was found supporting the existence of pre-testing or any other consultative process relating to materials/ pathways/ messaging. (See Appendix F, Category 5).

- Is the communication strategy designed with an evaluation process built in (each event)?

No evidence was found supporting the existence of a built-in evaluation process. (See Appendix F, Category 5).

- Is evaluation regularly carried out?

No evidence was found that any evaluation was carried out relating to the communications tools. (See Appendix F, Category 5).

- Is feedback regularly incorporated into changes to the messaging / material?

No evidence was found for an iterative process for feedback in the risk communication processes in the case study community. (See Appendix F, Category 5).

5.2.6. COORDINATION

- Is there coordination (amongst organizations) behind the communication strategy, including development of the message?

At the time of the study, Labrador Inuit Association had several departments (now largely absorbed into the Nunatsiavut Government) that had some level of involvement with health, inasmuch as they were responsible for community health workers and the LIA Research Office. The health personnel in the community were primarily responsible for healthcare delivery rather than health messaging and education. (See Appendix F, Category 6).

There was one example of a coordinated communication strategy found in a document: the poster / pamphlet *Saglek and Your Health* (D25) was developed as a coordinated effort between LIA Research Office and LIHC (and made available in English and Inuttitut). This informative document and other LIA-generated materials were available

in most LIA offices (e.g. headquarters, research office, LIHC office, etc.) even if not designed jointly. It was mentioned that LIHC generated all of their health education materials at their (regional) headquarters (Northwest River, Labrador) rather than separately within each community. (See Appendix F, Category 6).

The overall lack of coordination was of concern to several healthcare workers / educators, one remarked that when it comes to nutrition and health "all agencies need to sing the same song...then somebody gotta hear it!" In addition "we need talk the talk AND to walk the walk ...everything we (LIHC) does should reflect healthy eating. We should be handing out water and fruit and healthy things instead of giving kids box-drinks with no nutritional value." (See Appendix F, Category 6).

- Does message come from more than one communicator / source when it is disseminated into the community?
    - If so, is message consistent? (e.g. coordinated for consistency)

Due to the existence of a number of agencies responsible for different aspects of healthcare delivery and health promotion messaging (e.g. public health nurse, doctor, community health workers, LIA Research Office) there are several (possible) sources for related information in the community. There was no evidence for coordination of message content. For example, public health had primary responsibility for breastfeeding education and infant and toddler health but had no information on wildfood consumption for pregnant women or mothers of young children. (See Appendix F, Category 6).

- Does a local organization(s) or communicator have the mandate to communicate / educate on this issue?

At the time of this study, no one organization had the mandate to communicate on this issue, although several of them had responsibility for some aspect of communication and education. For example, the (Newfoundland and Labrador) provincial government was, at the time of the study, responsible for delivery of the Canadian Prenatal Nutrition

Programme (CPNP) and other prenatal education in the community. Now that the Nunatsiavut Government has greater responsibility for healthcare delivery, school curricula, and even for regional environmental issues (e.g. contaminants) it could be seen to have sole responsibility for the education on this issue. (See Appendix F, Category 6).

- Is there communication within and between relevant organizations (or departments of an organization) on this topic, including across sectors (e.g. NGOs, LIA, LIHC, province, etc.) and is this included in the development and delivery of the message?

There was only one example of a document (D25, *Saglek and Your Health* discussed above) that demonstrated that organizations communicated either within their departments or with other organizations, at any stage of the process of developing or delivering messaging / materials. Interestingly, this was the only example present of an advisory. (See Appendix F, Category 6).

5.2.7. CAPACITY OF COMMUNICATORS

- Does the communicator organization have trained and educated individuals on these topics?

The organizations with some level of responsibility for health information have many highly-trained staff, although only one branch of one organization (LIA Research Office) had staff with specific training related to contaminants communication. LIHC identified its community health workers (CHWs) as having this role. Therefore, it could be seen as within the training / skill-set of CHWs to design, deliver and evaluate health risk messages within their communities and region. In addition, CHWs, while they have many other responsibilities, from their very position as 'frontline workers' in the community, are likely to have an excellent understanding of the pathways, processes and preconceptions in effect with their community (on a variety of relevant topics). Schoolteachers also teach subjects that include some aspects of these topics (such as nutrition and health). (See Appendix F, Category 7).

Several respondents in this group (educators / health care workers) expressed an interest in doing more education around nutrition and health as it related to wildfood, including exploring community concerns over access, and promoting intergenerational hunting and cooking skills development (more on this in Chapter 6). While schoolteachers do in fact teach subjects that include some aspects of these topics (such as nutrition and health), they do not necessarily have the training or interest in understanding (and then effectively adapting) the material in the required curriculum as it relates to the local context.

- Are there people from these organizations whose mandate it is to inform / educate on this topic?

No one job position / individual has this mandate or role, although certainly public health nurses, CHWs, clinic nurses and doctors (and, to some extent, school teachers) are all the 'frontline workers' with this target group, and to varying degrees, on health and nutrition topics , which could include information on contaminants in wildfood. From the interviews it was evident that much of the education on this topic is carried out if the individual educator / healthcare worker sees it as a priority amongst other (possibly more) urgent community health concerns. In essence, much of the education on these topics is not mandated but rather is 'voluntary' on the part of the worker. (See Appendix F, Category 7).

5.2.8. CAPACITY OF RECIPIENTS

- Is local population educated on the topic?

In Nunatsiavut and especially in the community of Nain, the local population had had some previous exposure to the topic of environmental contaminants and health. The LIA Research Office newsletter, *Avativut* (D1) had been providing contaminants-related information for several years at the time of the study, with articles on health concerns as well as updates and announcements of studies being undertaken in the region (e.g. the collection of wildlife tissue samples). There was a general awareness of wildfood and contaminants, and some people were even specifically aware of 'some kind of an

advisory on hunting grounds (near Saglek)' (though they could not say exactly what the warnings were). There seemed to be a wide variation in level of understanding. At the time of the study, an ITK poster from the series on contaminants and health (albeit a poster for a different region) adorned the airport wall [and still did in March 2009]. (See Appendix F, Category 8).

- Does the local population have sufficient 'science literacy' to understand the message (at the level it has been communicated)?

Interviews with the target group indicated that some of these young women did not have complete understanding of (at least some of) the information. There was some interchanging of the words 'contaminants', 'pollution' and 'bacteria' for example. Confusion around nutrition messages was alarmingly evident in some first-time mothers-to-be, who were using Internet sources to learn about prenatal nutrition. They indicated confusion over food values and portions. Schoolteachers confirmed "a lot of people don't realize the difference when it comes to nutritional value (of) what they are eating". Some health / educators were very concerned that not only is there confusion about nutritional values but a lack of understanding of the cause and effect of diet choices on health (from dental caries to diabetes). As one health worker put it, "I think as health professionals that we sometimes forget that not everyone in the general public has the knowledge that we have...to the average person, this is something new to them...to have to interpret some of the things that you read on the internet, or in magazines, or hear on TV, to make good, educated judgment about....". (See Appendix F, Category 8).

Overall, the young women in high school had a better understanding that various Internet sources had differing purposes behind their messages (e.g. commercial site versus health advisory).

- Does the local population have the economic ability to act upon recommendations if necessary? (e.g. to buy nutritious foods to supplement or replace wildfood sources)

The target group respondents and health workers expressed great concern over the quality, nutritional value, and cost of food available to them in their local stores. Even 'staple foods' are prohibitively expensive, according to some respondents. Much of the discussion by the target group, especially the mothers and mothers-to-be, revolved around this and other 'food security' issues. (See Appendix F, Category 8).

5.3. SUMMARY

Table 5 provides a selected example of summary evaluations in each of the eight communication framework categories. Via this process of weighing the evidence for and against the presence of critical criteria for 'effective' risk communication some conclusions are made in this analysis. Overall, this study indicated that although the target group has information available to them about good nutrition during pregnancy and other related health promotion messages, it is not always 'reaching' the target group. They do not necessarily access the information because it is offered in locations and / or media that are not pathways that they elect to use. Local communicators are generally trusted, especially when they do in-person presentations. The message around contaminants is consistent, but there remains some confusion over the intent of some messages. All of the 'local' messages were noticed and well-received by the target group, but very few of the documents in the community were produced locally or with much consideration of the local context. The source of many hand-out documents is unclear. There was no evidence that messages are typically pretested or evaluated.

There appeared to be a lack of coordination between and within agencies, but when there was a joint message released (e.g. *Saglek and Your Health* D25), it was successful in communicating a balanced message, and it was clear where to get follow-up information. Human resources challenges mean that turnover is high in many health care positions in the region (this also applies to schools and teaching positions). The people in these positions have an awareness of local community needs and communication pathways.

The target group had an awareness of the contaminants issue but there was a general lack of understanding of nutritional values. When it comes to cooking wildfood, young

women admit that they prefer it, but do not know how to prepare it, while some of the health educators expressed concern that the way in which some of it is prepared (e.g. cooked in pork fat) undermines the inherent healthfulness of wildfoods such as caribou. Finally, information on the topic of contaminants and wildfood is available to the target group, and the general public, but all respondents state that other nutrition and health issues in their community are of greater concern to them.. In Chapter 6 these results will be discussed in the context of the risk communication and health communication literature.

Table 5: Selected Examples of Presence / Absence of Elements of Risk Communication

ELEMENTS OF ENVIRONMENTAL HEALTH RISK COMMUNICATION	STRENGTHS IN CURRENT SYSTEM	WEAKNESSES IN CURRENT SYSTEM
Message	consistent message	confusion over intent
Context / framing	'local' messages well-received	few messages 'local'
Pathways / Networks	lots of information available	locations and / or media not reaching TG
Communicators	local communicators trusted	source of many documents unclear
Materials / Tools / Process	local materials noticed / used by TG	not pretested/ evaluated; not reaching TG
Coordination	joint advisory successful	lack of coordination between and within agencies
Capacity (of communicators)	awareness of local community needs, communication pathways	health human resources challenges / turn over is high
Capacity (of recipients)	general awareness of issue	science and health literacy capacity low

CHAPTER 6: DISCUSSION

This chapter is organized around the categories / themes of the analytical framework used in the thesis. In this chapter the results of the case study are compared to the risk literature. In Chapter 7 general conclusions are drawn for the study and recommendations for research and action are provided.

6.1. MESSAGE

One of the greatest challenges in health risk / benefit communication around wildfood and contaminants is that it is not a simple message, because "a traditional food pattern is composed of many nutrients with specific effects on [e.g.] cardiovascular health and diabetes" and people generally eat a combination of store foods and traditional foods (Bjerregaard & Jeppesen, 2009). "People do not eat N-3 fatty acids, they eat meals" (Bjerregaard & Jeppesen, 2009). They also do not eat 'mercury', they eat fish. The research in this thesis indicates that people in the target group are not particularly concerned about contaminants but when it is discussed they show some confusion over what wildfoods are healthy to be eating or avoiding.

Based on the literature review on the topic of northern contaminants risk communication, it is considered of vital importance that any message about wildfood consumption that is provided to the target group be balanced, that is, contain information about both the risks and the benefits related to eating these foods (Furgal et al., 2005). For example, while eating parts of sea mammals may expose a person to PCBs (that may be stored in the fat of the mammal), it also provides healthful fatty acids and vitamins that may not be present in sufficient amounts in the diet if this food is avoided due to a perceived risk (Kuhnlein et al., 2000; Van Oostdam et al., 1999). In this study, one health educator said, "We need to reiterate risk and get them to really understand full implications of diet" (Appendix F, Category 1). The case study conducted in Nain confirmed that clear communication of both benefits and risks requires continuous and consistent messaging (Grondin & Carron, 1999; Furgal et al., 2005).

In this study, the message, when linked to the local context (what wildfoods and the parts and portions people really eat), was favourably received and a more memorable communication tool than most other materials released in the community. An example of this was '*Traditional Labrador Inuit Foods / Piusitukaujutut Labradorimiut Inuit Nikingit'* (D30).

The literature explores the 'human nature' aspect of risk communication (people basically want to know "is it safe or is it not safe?" and nuanced messages may in fact be confusing the ability to get what seems like an answer (Fischhoff, 1995; Powell & Leiss, 1997b; Myers & Furgal, 2006) . This factor was apparent in the case study presented in this thesis. As one key-informant stated "It is not always as easy as 'native food is good for you' " (Appendix F, Category 1), and there is some evidence in the community that people were not altering their food choices in any way despite messages geared toward the target group about modification of intake of certain wildfoods.

According to the literature on health messaging, the first exposure to information—or their intuitive knowledge—becomes 'the truth' for many people, and is hard to dislodge, even with exposure to newer or clearer information (Fischhoff, 1985; Kraus et al., 1991). On the other hand, when interviewed, people typically will clearly recall and recount their most recent experience with an issue (Fischhoff & Slovic, 1979), for example, a TV commercial seen yesterday rather than a radio call-in show listened to attentively a year ago on the same topic. Both of these tendencies were evident during the research in the community. When asked about where she accessed health information, one young woman in the target group only mentioned a television show seen that morning, "where they were doing little ol' health tips" but later added a wealth of further detail on what she knew from the many other sources she accessed on these topics.

The use of local language and concepts is suggested by the literature as aiding in effective risk communication messages (Vaughn, 1995). This is stressed particularly in Aboriginal contexts by Furgal et al. (2005). Although translation of materials is important to do with (and specifically by) Aboriginal communities, in this case study

Inuttitut was not the language of operation for the target audience of young women between 13 and 45 years of age. This is important to note when weighing whether or not materials were available to them in Inuttitut, because cultural relevance is not just about language translation. If Inuttitut grows in use, as is hoped by Nunatsiavut Government and many community members (and which is thus being promoted in culture camps, schools and daycares) then it may be more important to future messages in this region, regardless of the target group.

There was no evidence that messages in this community were pretested and most often, the origin of the material was not clearly identified (or the materials did not contain sufficient contact information). As a result, documents found in the community largely did not provide for two-way communication, although the target group knew of some people and agencies that they could go to in order to get further information if they required it. There was a very limited opportunity for iteration and evaluation at the time of the study, and these are cited as critical elements of effective risk communication strategies elsewhere (Rowan, 1994; Powell & Leiss, 1997a)

6.2. CONTEXT / FRAMING

The literature about risk communication demonstrates that the context into which a message is released has an undeniable impact on the effectiveness of the strategy and on the behavioural choices which affect health (Vaughn, 1995; O'Neil et al., 1996). What the 'reality' is in an Aboriginal community may render messages ineffective if not properly contextualized. For example, when there is a municipal boil water advisory in the community, communicators who assume that once advised to do, people will boil their water or (purchase and) drink bottled water (which may not be available in sufficient quantities in the community) ignores the local custom of gathering water from 'springs' and brooks. These brooks are not part of the municipal system and community residents often considered them 'exempt' from the advisories, and would gather their water from these sources believing them to be pure and healthy, and in fact, safer than the municipal system. As identified by the participants in this study, this health risk message would therefore not necessarily result in less exposure to water-borne bacteria. According

to the responses from participants from both categories of key informants, this key disconnection from the intention of the message applied to other wildfood customs in the community as well, e.g. cooking wildmeats in pork fat after being told that caribou is a lean and healthy food choice.

In addition, this thesis research confirmed that Inuit face many other health-related issues that affect their communities on a daily basis and that the 'non-specific nature of the contaminants message' may makes it a lower priority than others (e.g. youth suicide, diabetes, and boil water advisories) (Furgal et al., 2005). As one health care worker stated "The issue of contaminants is like, so low on the totem pole". Please also see Section 6.8 for further information on recipient capacity to respond to messages.

6.3. PATHWAYS / NETWORKS

Effective communication material is not truly 'effective' at delivering a message unless it is distributed through pathways that ensure it will reach and engage the target audience (Furgal et al., 2005). In the literature, it is recommended that several select pathways be used for message dissemination rather than only one (Usher et al., 1995; Lampe et al., 1997; Furgal, 1999). In this case study there was evidence that the information, though 'available' in the community, was not 'reaching' the target group. The information was present in several locations accessible to participants but was not connecting with the group in a way that translated to better understanding and improved nutritional choices despite this orientation of the content of the messages. During the interviews, the target group readily identified a number of communicators that they interact with, and these are summarized below in Figure 4. These do not indicate 'preferred' pathways but serve as an example of how many network possibilities exist in the current context of this case study. Focus group participants said they "know where they can get information" (Appendix F, Category 3).

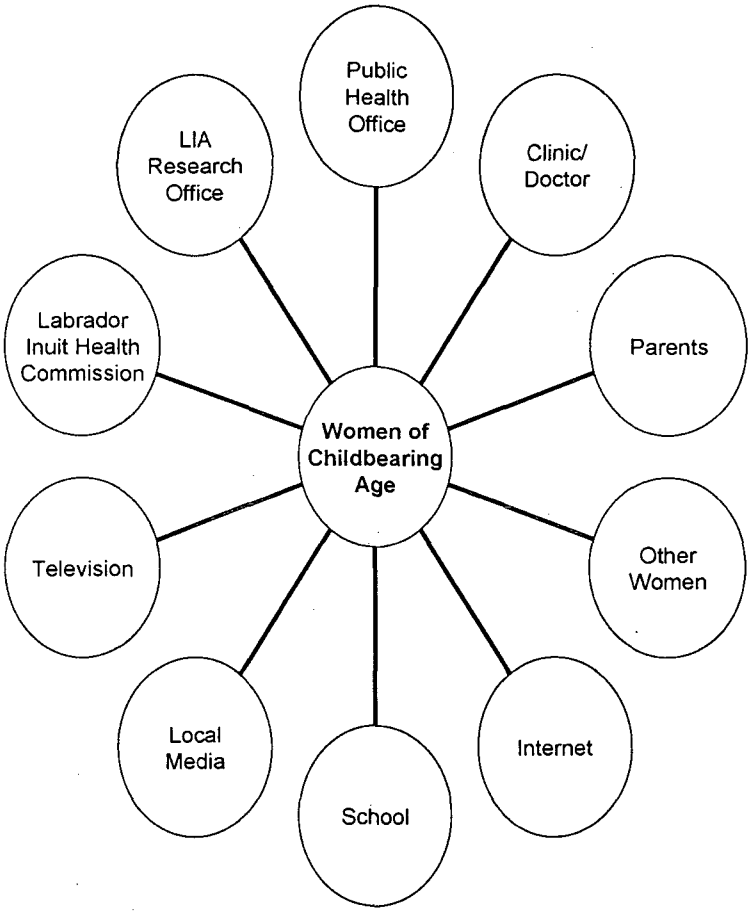

Figure 4: Communication Pathways

The target group readily identified communication pathways that they use and prefer, some of which might be specific to them, and which were not being utilized by communicators (e.g. Internet). The pathways that are used by the target group may be both formal and informal, supporting the need for a multi-pathway and perhaps multi-media approach to dissemination. They suggested many specific places that they use to access information on health (e.g. sports centre; youth centre; high school bulletin board; public health office hallway; post office bulletin board). The target group also identified pathways for communication that do not appeal to them, and this may be equally important in the development and implementation of communication strategies. Some media suggested by them included Internet sites, school projects, radio programmes, drama or art projects, and DVD / video production by the target group for the target group.

6.4. COMMUNICATORS

The experience of vulnerability pertaining to environmental 'injustice' informs the contaminants discourse (Satterfield et al., 2004). This is pertinent to this study because Inuit perceive the primary sources of contaminants as far away, not caused by or in control of by Inuit. This sense of injustice, is paralleled by the political history of the region which is dominated by power being influenced over the regional population by individuals or representatives from 'outside' and being punctuated by significant and painful events (e.g. forced relocation; and being required to send their children away to residential schools). One teacher mentioned the 'scars' in the community which affect mental health and parenting.

This case study confirmed that even in the presence of trusted communicators and messaging containing many of the elements required for good communication, the information may still fall short of instilling health-protective behavioural changes. The literature indicates that many people distance themselves from risks that they perceive to be out of their control, and therefore they do not necessarily respond in the ways that communicators expect them to, or want them to following risk communication efforts. This is further compounded in the case of contaminants, which are 'from far away', invisible, and the effects of which are not immediately observed or easily measured. "This stuff was never an issue when Inuit lived off the land," said one health care worker in this study, echoing the sense of futility reported in other studies around environmental issues facing Inuit (e.g. Usher et al., 1995; Furgal et al., 2005).

6.5. MATERIALS / TOOLS / PROCESS

From the literature review, it was apparent that iteration and evaluation are important—if not the most important—criteria in a successful risk communication process. Evaluation is not 'built in' to many studies; it is often mentioned in good faith, but it is often due to happen after the strategy has depleted its allotted time and money, and thus often does not occur. "In fact, the evaluation processes themselves need to be seen as further opportunities to engage the public and exchange information on these issues" (Myers & Furgal, 2006, p. 58). The lack of evidence for iteration and evaluation in the

communications in the case study were a weakness in the risk communication process in the region at the time of the research.

Other important strategies for avoiding risk miscommunication, such as pretesting (using people unfamiliar to the topic) and having a discussion with a mock audience to discover areas of concern or confusion over terms used, are well documented in the research (Jardine & Hrudey, 1996) but are also seemingly rarely practiced in this setting. No evidence was found that the target group's understanding of the issue was examined, measured or 'asked about' in any way prior to dissemination of much of the (contaminants) information in the community.

In this study, very few messages were in any way related to the local customs and preferences or took into account the realities of food access. One exception was a poster that was developed by the LIHC with the community to remedy the gap in culturally relevant food guide / food pyramid type of information. Most of the other materials found in the community at the time of data collection, and geared toward women in their childbearing years were simply reprints or photocopies of material from sources well outside the region. Much of the material from these agencies is produced elsewhere and often has limited cultural relevance to the local experience. While some of them may be considered 'neutral,' they contain wording, imagery and references that distance the recipients from the message and may ultimately limit the effectiveness of any message contained therein.

Culturally irrelevant images and /or words and terminology from outside of the community were found in print material collected for this research and seemed to have been dispersed without considering the impact on the recipient (or lack of impact, if it does not seem to 'apply to' them and is ignored). In addition, print material itself may not be the most effective media for Aboriginal communities. One of the health care workers said, "People don't necessarily read written information, they like to see it on OKâlaKatiget; people like taking part in things, sharing stories, being together in groups".

Some locally generated translations and renditions of contaminants information can render the message useless, no matter how well intentioned and memorable it is. For example, the admonition to 'not eat more than 418 Arctic hare livers per year' appears in an otherwise effective informative game from a Northern region. This type of information begs the question, is 417 really okay? Why or why not? It does not necessarily impart the pertinent aspects of the risks and benefits of the wildfood concerned, but it may simply suggest limited science data translation ability on the part of one communicator.

6.6. COORDINATION

Literature on communication suggests that consistent messaging ought to result in better understanding of messages on environmental health risks, such as exposure to contaminants (Lundgren & McMakin, 1998; Myers & Furgal, 2006). On the ground, this is difficult to measure since the communication on the topic has not necessarily been disseminated in a strategic and coordinated way and further, people can (and do) access information from sources beyond the strategy. In the case study region at the time of the study there was little coordination between and within agencies around health risk messages, in part due to capacity issues.

6.7. CAPACITY OF COMMUNICATORS

The capacity, or ability, for communicators to effectively educate the target group on this topic is influenced by several inter-related factors. A look at any northern newspaper or regional government website confirms that healthcare delivery capacity in northern communities is severely stretched because there are not adequate numbers of nurses, doctors, community health workers, mental healthcare professionals and other important primary care professionals in the North and this results in numerous empty positions. In remote northern communities, most healthcare services and personnel are, by necessity, focused on acute physical care rather than health promotion or prevention measures or other education campaigns. Even so, one health care professional conceded, "The more prevention we do, the less acute (conditions) will come in the door (of the clinic)". Encouragingly, Inuit midwifery is just now making in-roads as a prenatal care option,

allowing some women to remain in their communities for all of their pregnancy and for the birth of their children rather than leaving the community to await the delivery in a better-serviced, but distant regional centre (as has been the practice for many years).

The lack of availability of replacement staff when someone in the community goes on leave compounds the already chronic understaffing situation, sometimes creating serious gaps in service. Interviews conducted for this study revealed situations that have occurred where there were no prenatal classes in the community during some young women's entire first pregnancy. This shortage of staff also means that there is sometimes a lack of opportunity for training, in-service skills development and other capacity-building that might assist in developing a consistent risk communication strategy and related communication skills within a team of healthcare providers in the community. Within these professions and also in teaching positions, there is also generally a high rate of turnover, resulting in a lack of consistent communicators and reducing the opportunities for collaboration, which takes time to develop and carry through.

Northern community nurses and doctors are often dealing with urgent public health situations that require all of their attention and resources. A health care worker expressed, "The social aspects of community health (are the) cause of most health problems I see". For example, the high suicide rates and growing numbers of tuberculosis cases across Inuit Nunangat are important issues affecting the communities, putting immediate pressure on the health services (ITK, 2009a). Interview respondents confirmed that these more urgent health issues require immediate (and sustained) response by the healthcare workers in the communities and preclude the investment of the time, personnel and other resources for health promotion around something as 'non-urgent' as risk / benefit messaging around wildfoods and contaminants. Currently little exists in the scientific literature on the current capacity of communicators and the influences this has over effective risk communication. While the impacts are potentially very direct this topic likely requires further investigation particularly in regions where such challenges as those outlined here exist.

6.8. CAPACITY OF RECIPIENTS

There is great emphasis in risk communication literature on the audience and its ability or capacity to understand the message (Fischhoff, 1985; Kasperson et al., 1988; Fischhoff, 1995) and historically, especially in earlier phases of risk communication, the communicator has implicitly put the responsibility of understanding onto the recipients (Powell & Leiss, 1997b). Even so, one important way of being able to assess the risk communication message and whether it uses appropriate terminology and language level, etc. is to learn about the level of 'science literacy' the target audience possesses. One community health care worker interviewed for this study summed it up this way "I think as health professionals that we sometimes forget that not everyone has the knowledge we have...to the average person this is something new to them...to have the background to interpret some of the things that you read on the Internet, or in magazines, or hear on TV, to make a good, educated judgement about...because they don't have the background information to do that". (See Appendix F, Category 8).

It was not part of this research to measure the target groups' literacy of any kind, but the focus group interviews with the target group indicated that there is some confusion about some nutrition concepts and terminology and also around the concept of contaminants. One educator said, "I think one of the biggest problems is a lot of people don't realize the difference when it comes to (the) nutritional value ... of what they are eating. I know myself, I was quite ignorant to it until probably the last three or four years, at which time I took it upon myself to become more aware".

While the high school graduation percentages in Nunatsiavut are high—a 90% graduation rate—the numbers conceal a different story: few children make it through the educational system as far as to become seniors in high school. But if they do, they tend to graduate. Statistics also show that the graduation rate is very high for schools in all of Labrador and Nunatsiavut, but the graduating classes in many rural and remote communities throughout Canada often number in the tens and twenties (Newfoundland and Labrador Department of Education, 2004-5) such that a 90% rate of graduation in a class of 10 is just nine youths. In 2003-04 the regional statistics show that Nain had a 77.8%

graduation rate, with 18 graduates. This potentially speaks directly to the current and future science and health literacy among residents in the case community. Please see Appendix G for more regional education statistics.

In the context of this research, this information is not important to examine in comparison to other schools, regions or districts, but to aid in our understanding of the capacity with which young women are receiving and absorbing health messages. These numbers indicate that very few youth in the case study community have greater than a first or second year of high school science education. If a young person gets to be a senior in high school they may have taken enough science to give them basic literacy in the topic of the study. It is after the first year of high school that the curriculum goes further into health concepts, such as, in the words of one high school aged focus group participant "taking care of a baby and all that". (See Appendix F, Category 1).

Many assumptions have been made by communicators about the capacity of the recipients of health risk messages (Powell & Leiss, 1997a). Within this target group, with the possible exception of the young women currently still in high school, there seemed to be a lack of understanding about sources of information found on the Internet. For example, if one goes onto the Internet and searches terms such as 'nutrition' and 'pregnancy', one will encounter a variety of sources, ranging from advertisements to public bulletin boards to medical advice of every kind (and without any way of knowing the real sources or intentions of the information posted). One participant discussed what she knew about safe levels of caffeine consumption during pregnancy, gleaned from an Internet site. As she states, "like, on the Internet it said three cups of coffee is equal to four cups of tea and six cans of pop...like, okay, I can have one coffee, one tea and two Coke". There was little means for her to confirm or deny the accuracy of this information that served as an approval to consume a coffee, a tea and two pops every day of her pregnancy. It is not clear where people could get the education required to impart a healthy scepticism about (health) information encountered on the Internet (or in media of any kind).

Other capacity challenges such as the feeling of powerlessness to 'do anything' makes the recipient of the risk information distance himself or herself from the message (Vaughn, 1995; Slovic, 1999). How people respond to the information they have on contaminants and diet is influenced by their own 'cultural rationality' (O'Neil et al., 1996) which has been shaped by past colonial relationships and a legacy of issues around trust (O'Neil, 1997; VBNC, 1997; Higgins, 1998). The communication about these invisible contaminants and the subtle health effects from consuming them is unfortunately seen by some Inuit as just another issue of many where outsiders are telling Inuit what is best for them. The sense of powerlessness discussed in the literature is, in many respects, through Land Claim Agreements, being replaced by Inuit showing they have the ability and the power to make decisions that affect their health and well-being.

Ultimately, even if this target group perceived a health risk (and there was little evidence that they did), they may still elect to do little in response because they feel that their options are so sharply limited due to economic and logistical constraints [to substitute store bought foods for wildfoods, or to alter which wildfood sources they access and consume] (O'Neil et al., 1996; Myers & Furgal, 2006). This attitude was also identified in this study. "Stresses on food security in many communities mean that adaptations to diet, should they be required, might be difficult for some households and not even feasible for others" (Myers & Furgal, 2006, p. 57). This was not only a major topic of discussion in the focus group sessions, but also in the key informant interviews in all professions.

To fully grasp the complexity of access to nutritious, affordable food, it is important to understand that access to wildfood has changed dramatically and requires expenditures well beyond the means of many people in the community. Guns, ammunition, boats (or all-terrain vehicles, snowmobiles), fuel and a relatively new commodity—time off from work or school—must be available at the same time (and the right time) in order to pursue most sources of customary wildfood. In addition, hunters in Nain (and elsewhere in the North) are expressing concern over changes in the abundance, location and quality of animals that comprise their wildfood sources, and there is growing consensus that

some animals are changing their migratory routes due to the effects of climate change on their food sources.

While it is not in the scope of this thesis to discuss this at length, it emerged from the interview data that these aspects of food security were the larger, over-arching issues of concern related to food and nutrition in the community. This demonstrates that even with all other elements of good risk communication in place, it still of vital importance to place health risk communication strategies in context.

6.9. SUMMARY

The case study data presented here shows that while communication in Nunatsiavut and especially within this community, has been carried out including many of the elements that were identified as important for effective environmental health risk strategies, there is still a long way to go to ensure that communication on the topic of contaminants, food, nutrition, and health is being received, and understood by the at-risk target group. Whether the messages will result in women making informed decisions about their nutrition choices that will result in beneficial health outcomes is something that remains to be seen.

CHAPTER 7: CONCLUSIONS & RECOMMENDATIONS

In this chapter the key findings from the research are summarized. I also describe the contributions and limitations of the research and finally make recommendations resulting from this work, including opportunities for future research.

7.1. KEY FINDINGS

MESSAGE: While efforts have been made to disseminate clear and balanced messages in Nunatsiavut, and there is a general awareness of the topic, this particular target group did not possess a clear sense of the intended meaning of many messages on this topic. This is of some concern since they are considered to be a sensitive group, influential in protecting their developing babies and children from the potential health effects of foodweb contaminants, and they may not be receiving or responding to the message.

CONTEXT / FRAMING: Nutrition and health information was readily available to this target group, especially pregnant women, however much of it was in locations that were not preferred by this target group. In addition, the print formats and selection of non-local imagery and references did not seem to appeal to the young women interviewed in this study. If the material is deemed irrelevant to their setting and the food choice options they have, it may be disregarded no matter how clear or otherwise balanced the message is that is presented in this material.

PATHWAYS / NETWORKS: Young women use a wide array of pathways to get information on health topics, especially nutrition issues. Many of these pathways of communication are informal (family, friends) while others are more formal (public health office, clinic). These pathways may be specific to the target group, and within that, to an age-group. The target group readily identified the pathways they prefer and also those not as often used for health and nutrition information gathering. The identification of preferred pathways is an element of risk communication that can be implemented at the start of a communication strategy directed toward a target group, supporting several of

the key elements in the literature (found in the category MATERIALS / TOOLS / PROCESS).

COMMUNICATORS: Several agencies and organizations in the region and community have some part in the communication around health and nutrition. The challenges that are faced in regional and community healthcare agencies to carry out the important day-to-day and urgent healthcare responsibilities often precludes the communicators from initiating health promotion strategies, especially in regards to the topic of contaminants and health, which they generally perceive as far less critical than other health issues in the community. The local communicators seem to be generally trusted as resources but the target group may not be seeking out further information on nutrition, wildfood and contaminants at all.

MATERIALS / TOOLS / PROCESS: In part because there is no one agency responsible for the environmental health risk communication messages, there is limited ability to carry out a communication in a strategic, planned way that adheres to the principles for 'good' risk communication as outlined the literature. This leaves out several key steps from start to finish (e.g. pre-testing and evaluation) and results in 'communication soup' where many important elements may be there but with little opportunity to evaluate the process. It is often difficult to identify the origin of the communication material that is present in the community. In addition, the target group did not relate to much of the material available because it was presented via a medium or tool that was not seen as relevant to local realities. Materials produced by local or regional agencies were very well-received by this group and by the local communicators themselves.

COORDINATION: In part due to the chronic under-staffing of healthcare positions that was being experienced in this region, inter-agency and intra-agency coordination around health communication messages is the exception rather than the norm. Healthcare workers expressed an understanding of, and interest in 'singing the same song' to promote better nutrition, but were limited because of other healthcare priorities. When coordination does occur, it appears to be well-received and possibly adds to the clarity of

the message since it requires cooperation and the alignment of the message across one or more agencies with the participation of several health communicators.

CAPACITY OF COMMUNICATORS: The capacity of health communicators to address this and other health topics is affected primarily by other priorities demanding their attention, time and expertise but also by the aforementioned staffing shortages. Meanwhile, few of the respondents in this study felt constrained by the resources available to them to gain more knowledge or purchase materials for professional education on health topics. Several also expressed an interest in doing more health promotion, as well as more collaboration, but did not feel that they had the time.

CAPACITY OF RECIPIENTS: This research confirmed that the target group is not particularly concerned about the issue of contaminants, especially in comparison with other food and nutrition issues that they face. The areas of greater concern to them, related to food, can be grouped under the concept of food security and include the ability to procure nutritious and affordable food from the store and also from customary wild sources. The target group's limited (economic, access) capacity to enact dietary changes (if required) speaks to the way they may receive and potentially regard (or disregard) future information that may be of critical importance to their health related to the minimization of exposure to environmental contaminants present in wild foods. This relates to the issue of delivering messages with an understanding of the contextual reality being experienced by the target audience.

An important and somewhat unexpected result of this study is that both the health / educator respondents and the target group participants expressed that the issue of health risks from contaminant exposure is of little concern to them, especially when placed in the context of other health concerns in the community and, especially in relationship to overall food access issues. Few of the respondents mentioned the issue of contaminants at all while being interviewed, but most people expressed concerns over the affordability, accessibility, quality and nutritional value of both wild caught and store bought food. This may indicate that past communication has not necessarily made the risks clear to this

vulnerable group or that, compared to other concerns, it is less of a daily worry and previous communications have not understood the local 'context' of food and health issues very well.

Even with a clear understanding of the risks and benefits of wildfood consumption, the (financial) ability to substitute 'equivalent' healthy store-bought foods (if necessary) was perceived to be severely limited. Even 'staple food' costs are prohibitively high. The North has an inherently vulnerable and inefficient system for food delivery to the communities and attempts at improving the nutritional quality of food available in the communities have met with mixed success. Much of the discussion with the target group, especially the mothers and mothers-to-be, revolved around this and other food security issues.

7.2. RESEARCH CONTRIBUTIONS

This thesis looked at the key factors that influence the communication of environmental health risk messages with an at-risk population in an Inuit community, investigated through a case study project conducted on the issue of foodweb contaminants in wild food resources, and the communication process with women of childbearing age.

This thesis represents an important contribution to the understanding of communication with a target group on environmental contaminants, nutrition and food. More importantly, it makes a strong case for using the self-knowledge of a target group about their communication pathways to more effectively engage this audience when developing and releasing health messages. The research addressed a gap in knowledge around 'how' people hear about what they know, rather than measuring (only) 'what' they know. It is hoped that this thesis research will inspire more diligent attention be paid to the risk communication process in Aboriginal communities, with an understanding of the many factors that influence risk communication processes. It shows that there is more to do than following a template to avoid (the numerous possible) pitfalls of the health risk communication process.

This research may benefit Nunatsiavummiut in that it contributes to a better understanding of the environmental health risk communication process, supporting them in making well-informed decisions about wild food consumption and health. It may elucidate the value of using local pathways and networks of communication for getting information to target groups, especially those groups considered most vulnerable to contaminant exposure. This case study also may be of interest to anyone who is carrying out similar research in an academic or policy setting, and to those people who are valiantly trying to improve the health outcomes for Inuit, or other Aboriginal groups or communities via health education and promotion efforts. Insights may be gained from this study that are useful to another researcher, but more importantly, to communities striving to improve their own health communication.

An important step for the success of the larger project of which this thesis is a part (NCP contaminants communication), was the establishment of partnerships with local and regional organizations such as the Labrador Inuit Association (Nunatsiavut Government), the Labrador Inuit Health Commission (LIHC), and the OKâlaKatiget Society (regional radio and television station). Because this thesis project involved interacting with and conducting work in the communities of Nunatsiavut, it was part of the continued development of these important relationships. It also encouraged collaborative research between an academic institution (via a student researcher) and an Aboriginal community.

As a researcher I strived to carry out the research in an ethical and open manner, following the recommendations suggested by research methods literature and the ethical research guidelines that were developed by Inuit. I believe that my continued positive relationship with community members is a testament to my attitude and bearing during this research process. I look forward to returning the results to the community in a manner they choose, and to meeting the new children born to some of the women in my focus groups.

7.3. LIMITATIONS OF RESEARCH

Although this research was comprehensive, it was a case study and as such is an example of one Inuit community and it is important to recognize that there are no 'typical' Inuit communities. Each of the 53 Inuit communities across Inuit Nunangat has a different 'reality'. They experience many variables in geography, transportation, number of stores and other services, healthcare delivery systems, population size and other important demographic measures. As such, the results and recommendations in this study are not meant to be viewed as 'one size fits all' with conclusions applied outside of the case study community. For example, a variety of (target group) 'user-friendly' locations and pathways were suggested for communications materials in Nain, but another community may find that it would identify entirely different locations and pathways for the dissemination of materials. While the research design and methods can easily be adapted to address a similar research question or topic, it is important not to see this study as representative of anything other than a case study within a larger body of research on environmental health risk communication in an Aboriginal community context.

The length of time the research was conducted and the number of participants who were interviewed has an effect on the research. Sufficient time was given to the design and research and it was potentially possible to conduct more interviews without a large increase in preparation time. It is possible that some participants did not want to participate in focus groups because of (good or bad) personal relationships with other women in the community, most of whom are known to one another.

Another potential limitation of this study was the relatively short field research period (about 3 weeks). Due to the costs of getting to and staying in Northern communities, often timeframes are kept short even for non-seasonally dependent research (such as this study). Sometimes people hear about the study after the researcher has left the community, making it possible that qualified participants were not included in the study. Assisted by LIA Research Office, I made an effort to let the community know that I was working on a research project and when I was arriving. They were also notified about how they could contact me, and upon arrival I described and advertised the study through

a variety of community pathways that were suggested to me by the community (e.g. I participated in a radio interview). These measures offset some of the possible limitations.

7.4. RECOMMENDATIONS & OPPORTUNITIES FOR FUTURE RESEARCH

While this research focussed on environmental health risk communication, it is recommended that a three-pronged approach be taken in order to effectively reduce health risks from exposure to environmental contaminants (Downie & Fenge, 2003):

1. improve communication and promote understanding around the issue to influence behaviours that can improve health outcomes
2. implement policy change to reduce release of contaminants into the environment
3. improve food security via policies and practices that ensure nutritious foods, including wildfoods, are available to Northern communities

7.4.1 RECOMMENDATIONS

Moving from risk-based to health-promotion based messages, as has been the trend regarding food and contaminants in many regions of the world, requires the integration of two-way communication around this topic with the communities involved (Powell & Leiss, 1997a, b). Carrying out community partnership-based environment and health research can be a major contribution toward participating in a more iterative communication process.

One of the key strategies for developing materials to communicate risk is to first understand the target audience's existing perceptions about the topic. As this process takes some time and planning, and health risk messages are often developed with a sense of urgency, existing perceptions are very rarely reviewed with any rigor and much is therefore assumed.

As with any population, there are varying degrees of formal and informal education going on, but in a remote locale with limited resources for clarifying the existing information, it is exceedingly important that health messages be communicated by locally trusted

sources, as clearly as possible and in locally relevant methods and media. When local offices and agencies distribute predominantly out-of-region materials, or materials with inadequate contact information, then it may be less likely that community women will seek further information from the originator of the message. This is very important when considering whether the communicator or the source of information is a trusted communicator. Interestingly, one youth remarked, "I don't think we get enough info about healthy foods from our families as we should". (See Appendix F, Category 4), indicating that there are trusted messengers / sources of information that *should* be educating the target group and that they would possibly listen to.

Other communicators on health are role models, a concept that was raised during the interviews. In particular, the respondents mentioned the value of a 'champion' in the community who made healthy eating and lifestyle choices and who were inspiring to others. There were individuals in some Nunatsiavut communities who were seen to be doing this, but it would be interesting to see if it is possible to promote and support this kind of role model more formally within the target group.

The younger women within the range (of women of childbearing age) are of particular interest since they readily identified pathways that do not work for them, as well as revealed trusted sources and communicators of information. The focus group participants commented on school curricula and other programmes in school that were presented using props and slides of photos as being more interesting (e.g. photos of diseased lungs were clearly effective in showing them the gravity of the risks of smoking). How this type of approach might apply to balanced risk / benefit messaging around food, nutrition and contaminants is worth exploring. This has direct implications for future health communication for the target group.

From this study it seems that pre-testing and evaluating materials meant for this group would be prudent, since much of the previous information has not reached them. 'Available' does not mean accessed or read or understood. The pathways that these young women use may not be the ones by which messages are currently being

disseminated.

For more effective health communication in the context of Aboriginal communities, the target group ought to be asked about which existing communication pathways are used by them and also what material (formats) are well-received by them. The community members themselves are very likely to be better at identifying this than 'outsiders' or even the staff of regional headquarters, since each community may have unique challenges and opportunities invisible to an occasional or distant observer. The location or means of dissemination also would depend on what type of material is deemed most relevant (e.g. poster; pamphlet; Internet website) and even what the particular subject is. Based on the favourable response to locally-generated materials in this case study, the appropriate choice of tools and the location of their release could be explored with or made by the community.

It would be valuable to further evaluate the Internet as a possible source / preferred pathway of information for young women in the communities. At the time of the study, none of the key informants mentioned specific contaminants-related information found on the Internet, but there were, for example, instances of first-time mothers-to-be accessing prenatal nutrition information which contained conflicting information. It would be useful to investigate this further to evaluate media literacy as well as 'science literacy' and perhaps 'health concept' literacy.

It is suggested that any materials released in the community identify the source of the information. The lack of identifiers on some existing communication materials is of concern because it might preclude the recipient from obtaining further information or clarification or perhaps even understanding the motivation behind the message (e.g. nutrition tips for during pregnancy vs. advertisement for prenatal vitamins). In addition, the lack of a date on material may also be of concern since newer, updated or preferred messages might have been released, yet the older message could still be circulating information that was incomplete, outdated or otherwise incorrect.

It was mentioned that LIHC generated all of their health education materials at their (regional) headquarters rather than separately within each community. While this was done, in part, to ensure the clarity of messaging it also might be considered restrictive of a community's efforts to develop their own communication materials in response to specific community issues and concerns (e.g. suicide prevention; nutrition) as well as resources and solutions for these issues. Limited capacity means that optimal choices must be made about the best use of all the available resources—monetary, as well as the local human capacity, energy and enthusiasm—to communicate any health messages. Coordination between and within agencies is not only important for consistent messaging, but collaboration may create opportunities for cost-sharing, helping offset the time and money required to produce and distribute communications materials and to train the local communicators. This might benefit agencies which are under-staffed.

Meanwhile, in remote, northern communities most healthcare services and personnel are, by necessity, focused on acute physical care rather than health promotion or prevention measures or other education campaigns. Several respondents in healthcare roles expressed an interest in doing more education around nutrition and health as it related to wildfood, including exploring community concerns over access, and promoting intergenerational hunting and cooking skills development.

If the final goal of health risk communication is improved or protected health, then evaluating the results is important. When the health / educator key informants were probed about how they might know if the information they have released is 'working', a few replied, "You don't know." Almost half said that observing "kids *not* eating junk food" would show them that the education messages were working. (see Appendix F, Category 5). In addition to 'scientific' studies (24-hour diet recall and other nutrition-related measurements) there are many possibilities for the communities to carry out evaluation by their own criteria.

The effects of nutrition on health are not limited to any one target group and the results of this study indicate that there is growing concern in the community about diet-related

chronic health problems as well as food security. It is important not to lose sight of the bigger picture in the community when focusing on a vulnerable target group, and to promote healthful food behaviours for everyone. The parents of some the young women in this target group have already lost much of their connection with wildfood for a variety of reasons, and this generation also did not benefit from education on nutrition. From the interviews, it was evident that there has been a decrease in intergenerational knowledge sharing but that the culture camps and other programs were beneficial to those who participated. These might be encouraged.

Finally, communicators need to be aware of all of the required elements for good environmental health risk communication, such as trust-building and consistency but also cognizant of the legacy of previous communication (e.g. restrictions on the Inuit way of life) that has been represented as being 'for the good of Inuit' but which ultimately did not improve—and in some cases damaged—Inuit health and well-being.

7.4.2 OPPORTUNITIES FOR FUTURE RESEARCH

Now that all four Inuit regions of Canada have settled their land claim agreements and have therefore secured (varying degrees of) control over curriculum, language promotion and health care delivery, it could be an ideal time to follow the full risk communication process as implemented in the release of new messages on (similar) health issues. For example, if a community designs a DVD on diabetes, it could be valuable to evaluate the process therein (e.g. is there pre-testing and evaluation inherent in the project?) and look at the attitudes and outcomes in the target group(s).

Identifying the positive results of good risk communication on such a complex issue may be so slow a process as to be nearly elusive, but it would be interesting to follow a cohort which gets specific (health) information in a specified way to see what results, if any, are to be found regarding their knowledge, attitudes and possible subsequent behavioural changes around nutrition and pregnancy.

Future research on similar topics or in similar, geographically isolated Aboriginal

communities may now more easily be carried out following the structure and process of the design of this and other recent thesis research. This thesis design and even the specific line of inquiry can be repeated and applied elsewhere. The research design and the results have practical applicability for communicators and communities involved in risk communication strategies. The 'take home message': identifying the pathways that this target group uses can improve health risk communication and can be identified by involving them in the communication process.

The long tradition of research being driven by the interests of academia, rather than those of Inuit, is starting to give way to genuinely collaborative approaches that may ultimately result in a beneficial change for Inuit health outcomes. Based on this thesis research experience, when ideas for future academic research are being developed, it is recommended that Aboriginal communities are consulted about their research interests, needs and capacity to see if they want the research to take place or have any input for the proposed research. There is no shortage of urgent health disparities that need to be addressed, and the opportunity for research to contribute to the solution is immeasurable.

Today, researchers are expected to engage fully in the proper ethical relationships required to do research with Aboriginal communities. From the literature, it is also important to pre-test interview questions (or similar survey materials) and therefore to build in the time and logistical support required for this step, and for any translation of materials to be used in the community. Sufficient time needs to be spent in the community where research will be done, especially if the researcher is not already somewhat familiar with the community (and vice versa).

Lastly, some of the participants in this study (and others) voiced the hope that this kind of research needs to 'go somewhere' and 'do something'. The academic research-into-policy step should be examined as the next step for this kind of research. As a result, one day perhaps we will have, enshrined in federal policy, a requirement to communicate about environmental health risks in a clear, consistent manner that includes two-way dialogue and which effectively influence the health outcomes that we are striving for.

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APPENDIX A: NUNATSIAVUT LAND CLAIMS MILESTONES

DATE	THE LABRADOR INUIT LAND CLAIMS NEGOTIATION PROCESS MILESTONES
1977	The Labrador Inuit Association (LIA) files a statement of claim with the Government of Canada (Canada), entitled "A Statement of Claim to Certain Rights in the Land and Sea-Ice in Northern Labrador".
1978	Canada accepts Labrador Inuit land claim for negotiation.
1984	Canada selects Labrador Inuit land claim for active negotiation.
1990	A framework agreement outlining the agenda, process and timetable for land claim Agreement-in-Principle (AIP) negotiations is signed in November.
2001	Land selection negotiations conclude in March. The LIA, Newfoundland and Labrador, and Canada sign the AIP on June 25. The LIA, Newfoundland and Labrador, and Canada sign an Interim Measures Agreement to protect Inuit rights and benefits negotiated in the AIP on November 16.
2002	The Labrador Inuit adopt the Labrador Inuit Constitution on April 15.
2004	The Labrador Inuit ratify the Agreement with the support of 76.4 per cent of eligible voters with an 86 per cent turnout on May 26. The Labrador Inuit Land Claims Agreement Act, which gives effect to the Agreement was passed and received Royal Assent in the Newfoundland and Labrador House of Assembly on December 6.
2005	Overlap Agreement is initialed with Innu Nation in May. Bill C-56, An Act to give effect to the Labrador Inuit Land Claims Agreement and the Labrador Inuit Tax Treatment Agreement, received first reading in the House of Commons on Monday June 6, 2005. On June 15, the Bill was passed. On December 1, 2005 the Labrador Inuit Land Claims Agreement and the Labrador Inuit Constitution came into effect at the first Assembly of the Nunatsiavut Transitional Government, held in Nain.

Source: Nunatsiavut Government. (n.d. [b]). *Nunatsiavut Land Claims Milestones.* http://www.nunatsiavut.com/en/lilca_milestones.php. (accessed 28 July 2009)

APPENDIX B: QUESTION KEYS

Key Informant Interview Questions

Qi. Your role/title?

Qii. Your main responsibilities?

Q1. What are the main health issues / concerns in the community today?

Q2. For whom (are these a concern)?

Q3a. Any info on this topic available in the community? (such as?)

Q3b. How / where is it given out/available?

Q3c. Do you provide info on this?

Q3e. What info (formats/pathways)/

Q3d. (if not you) Who provides this info?

Q4a. What food & nutrition issues are most important in the community?

Q4b. For whom?

Q5a. Is issue of exposure to contaminants via eating wildfood important?

Q5b. Are people here concerned about it?

Q5c. How would you rank contaminants issue (amongst other issues) based on how often it is discussed (with you)?

Q5d. When was the last time you discussed / gave info on it?

Q6a.Where do people get food & nutrition info?

Q6b. Do you provide any of this?

Q6c. What info?

Q6c. What formats / pathways?

Q6e. Different message for different age groups?

Q6f. Different method (e.g. format) for different age groups?

Q6g. What are the most important things to consider in developing this info (message)?

Q6h. What are the most important things to consider in releasing (communicating) this info?

Q6i. Are there both positive and negative aspects of releasing this info?

Q7a. What is (are) the best way(s) to get info to WCBA?

Q7b. How do you know if this info delivery has worked?

Q7c. Do you have examples of this info (e.g. what gets handed out to WCBA)...

Focus Group Questions

Q1. Main health concerns in community?

Q2. Your main health concerns/

Q2a. tell me more?

Q3. Where do you get info on these?

Q4. What kinds of info?

Q5. Generally get health info where?

Q6. Is any info about nutrition?

Q7. Is info on pregnancy/taking care of a baby easy or hard to get?

Q8. Where do you get this info?

Q9. Is any of this info on foods that you should/shouldn't eat when pregnant/nursing?

Q10. Any concerns about foods you eat? Such as?

Q11. If any health concerns, rank food-related concerns…

Q12. What food/nutrition issues are most important to you?

Q12a. Why?/ other

Q13. Any concerns about store foods you eat?

Q13a. explain

Q14. Any concerns about wildfoods?

Q14a. explain

Q15.What do you know about this? ('contaminants' if mentioned)

Q16.Where did you hear this info?

Q17. (if term used…) Explain what you mean by contaminants

Q18. Do you have any concerns about contaminants?

Q19. What have you heard about this? Where do you get info on this?

Q20. Where did you hear about this?

Q21. Last time you wanted health info?

Q22. Where did you go/who did you ask?

Q23. Did you get info/did info answer your questions in a way that made sense to you?

Q24. Was it hard / easy to get the info/

Q25.Where do you/would you go for more info?

Q26. What kinds of info?

Q27.Where would you like to (or be most likely to) get more info?

Q28. Are there places (formats in which) you'd like to get more info but cannot?

Q28a. Why can't you get info there?

Q29. If public health authorities wanted to make sure this information was available to you, how should they get it to you?

APPENDIX C: RECRUITMENT POSTERS (ENGLISH & INUTTITUT)

Study on Food Choices and Health

As you may have heard, researchers have been looking at the connection between what people eat and their health for some time now. Some of this work has taken place throughout Inuit regions in Canada including Labrador. Some researchers are specifically interested what food choices are made by young women and women before or during their pregnancy, why they eat what they eat and how this may affect the health of their baby. One of the most important aspects of this work is how to communicate this information to the people that need it, such as young women and mothers. We would like to speak with women in Nain to hear what you think about this issue.

Libby Dean, a researcher from Dalhousie University is working with the LIA Research Office and the Nasivvik Centre to document the knowledge and opinions of young women in Labrador about their food choices. This includes opinions about health, what information they would like about health and how they would like to get information.

Libby Dean will be in Nain between April 1st and April 15th, and may be contacting you to ask if you would like to participate in a discussion on this topic. Your involvement will go towards informing researchers and organizations about what information you want on health and food issues, and how you want to get the information.

For further information, if you have any questions, or to volunteer to participate in this study please contact:

Libby Dean, Dalhousie University student or Mary Denniston

LIA Research Office (709) 922-2942

Kaujisattauningit NiKet PigumajauluaKattajut ammalu Inositsiagittogasuannik

TussasimakKuligatsi, Kaujisattet KaujisasimalikKut Kanuilingatsiamangata sunait nigijauKattamangata Inunnut ammalu inogusigijangit akunigalaulittuk. Ilangit suliagijaujut iniKaKattasimavut Inuit nunagijanginni Canada-mi ilauKatautillugu Labrador. Ilangit Kaujisattet Kaujitsiagumavut sunanik nigigumaluaKattamangata Inusuttuit annait ammalu annamaget sivungani upvalu nutagatsaKanniminni, sunanik nigiKattamangata ammalu Kanuk attuiniKamangata inositsiaginnisanganik sogusiakKulaup. Ilangat ikKanammagittuk suliagijaujop Kaujimatitsigiamik tamatsuminga Kaujititsiutiujummik inunnut sullo inosuttunut annanut ammalu annanagijaujunnut. UKalaKataugumavugut annanut Nain-imi tusagumavugut Kanuk isumaKamangata tamanna pidjutigillugu.

Libby Dean, Kaujisattiujuk Dalhousie Ilinniavitsuangani suliaKaKatauvuk LIA Kaujisapvingani ammalu Nassivik suliaKattinginnut allagiamut Kaujimausiujunnik isumagijanginillu inosuttuit annait Labradorimi pidjutautillugit niKet pigumajauluaKattajut. Tamanna ilautitsivuk isumagijaujunnik inositsiagittogasuannimut ammalu Kanuk tamatsuminga Kaujititsiutinik pigumagajamangata.

Libby Dean Nain-imelakKuk akungani April 1st ammalu April 15th, ammalu ilitsinik Kaujigumagajalluni apigillunillu ilauKataugumagajammangappit tamanna uKalautautillugu.. IlauKatannet ilinganiakKuk Kaujisattiujunnut ammalu katutjiKatigennigalannut pillugit sunanik Kaujititsiutinnik pigumagajammangappit inositsiagittogasuannimut ammalu Kanuk Kaujititsiutiujunnik pigumagajammangappit inosiliginnimik ammalu niKilittanimmik.

Kaujigiallagumagutsi, upvalu apitsotitsaKagutsi, upvalu akilittutaugasi ilauKataugumagutsi Kaujisannimut Kaujitilautsiuk Libby Dean, Dalhousie Ilinniavitsuangani ilinniatojummut upvalu Mary Denniston LIA Kaujisapvinga sulialik (709_922-2942:

APPENDIX D: ETHICS DOCUMENTS

DALHOUSIE UNIVERSITY
Inspiring Minds

Social Sciences and Humanities Research Ethics Board
Letter of Approval

Date: March 24,2005.

To: Libby Dean , School for Resource and Environmental Studies
Raymond Cote, School for Resource and Environmental Studies

The Dalhousie Social Sciences and Humanities Research Ethics Board has examined the following application for research involving human subjects:

Project # 2005-1058
Title: Communicating in Labrador on Environmental Contaminants: Developing a Strategy to Engage Target Audiences on Contaminant, Food and Health Issues
Submitted by: Libby Dean , School for Resource and Environmental Studies

and found the proposed research involving human subjects to be in accordance with Dalhousie Guidelines and the Tricouncil Policy Statement on *Ethical Conduct in Research Using Human Subjects*. This approval will be in effect for 12 months from the date indicated below.

Dalhousie Guidelines require that, on the anniversary of the effective date you must submit an annual report. Also, should there be any significant changes to either the research methodology, or the consent form used during the approval period, these changes must be submitted for ethics review. You must also notify the Office of Research Ethics Administration when the project is completed or terminated.

This letter is the official record of ethics approval by the Dalhousie Social Sciences and Humanities Research Ethics Board. You may use this letter to notify funding agencies that your project has undergone a thorough review and has been granted ethics approval.

Effective Date: March 23,2005. signed: _____

James Leary (Chair)

Copy sent to:
☑ Graduate Studies ☑ Research Services
Funding agency-Northern Contaminants Program (INAC)
Awarded: March 2004 - March 2005 Award No:

Research Services • Research Ethics Admin Office • Room 321, Henry Hicks Building • Halifax, NS, Canada • B3H 4H6
Tel: 902-494-1462 • Fax: 902-494-1595 • Email: Patricia.Lindley@dal.ca • www.dal.ca/~research

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February 1, 2005

BY FACXIMILY

To whom it may concern at the Research Ethics Board,

LIA is aware of and supportive of the proposed research by Dalhousie University graduate student Libby (Elizabeth) Dean. The work is being conducted by L. Dean under the supervision of her thesis committee: C Furgal and R Cote and F Williams (of Nain). It is a key priority in the LIA research office and we are very supportive of its conduct and completion. It addresses a key issue and we will be very interested to see the recommendations made by the thesis as to how we can best engage our population on these issues in the future.

Libby has worked in Labrador North coast communities before and her familiarity will help her carry out this research sensitively. We look forward to her approval by the Dalhousie Ethics Review Board and the beginning of her field research in March.

Sincerely,
Labrador Inuit Association

Mary Denniston
LIA Research Department

2005-1058

RECEIVED
FEB - 7 2005

Dalhousie University Ethics Committee:

On behalf of Inuit Tapiriit Kanatami (ITK) we are pleased to offer our continuing support for the project that being conducted by Libby Dean. The Inuit Tapiriit Kanatami (ITK) was founded in 1971. As the national Inuit organization ITK is dedicated to the needs and aspirations of all Canadian Inuit. For the past 10 years, ITK has been involved in national, circumpolar and global contaminant research and negotiations through the Northern Contaminants Program. This research by Libby will be instrumental in understanding the potential impacts that our communication may have to Inuit.

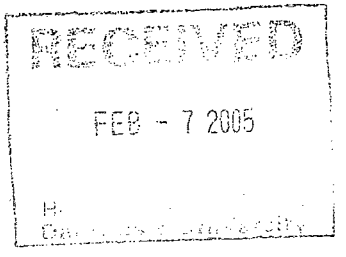
ITK feels that the success of Libby's work will make significant contribution to our understanding of how best to communicate contaminant information in communities and with specific at risk groups such as women of child bearing age. Libby's supervisors are well known to ITK. Both Drs. C Furgal (U Laval) and R. Cote (Dalhousie U) have made and will make strong contributions to Libby's work and to Inuit of Canada. ITK therefore is very supportive of the thesis work being conducted by Libby Dean and look forward to learning from her results.

Sincerely,

Eric Loring

Eric Loring
Senior Environment Researcher
Inuit Tapiriit Kanatami

2005-1058



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APPENDIX E: DOCUMENTS COLLECTED IN COMMUNITY

TITLE	SOURCE	DATE	ACCESSED WHERE	TARGET GROUP	TOPIC/ THEME	LANGUAGE	FORMAT	OTHER
Traditional Labrador Foods	Labrador Inuit Health Commission		LIHC HV-Goose Bay		Labrador Inuit 'companion' to Canada Food Guide...local traditional food values	English/ Inuttitut	Poster (large and 'fridge' poster)	-lost whole supply in major fire in Nain -available in HV-Goose Bay
Traditional Foods Calendar 2004	LIA Research	2003- 04	LIA Research		calendar with info on local wildfoods	English or Inuttitut	calendar	-many extras in office (distrib?)
Healthy Eating; A New Life	Adapted by Gov't. NL from Province of NS, Public Health	2002 (1998)	Public Health		healthy eating during pregnancy	English	Booklet (full size) 17pp	
Piguttuk Family Resource Centre (FRC) Newsletter	Piguttuk FRC, Nain	Dec. 2004	Piguttuk FRC (sends out via mail)	families with kids 0-6 yrs. old	FRC activities, community family C'mas greetings; recipes	English	Newsletter (full size) 13pp	-plans to have more recipes and upcoming cooking events for target age 0-6 years
CACAR II CD	INAC / NCP		LIA Research	?	NCP; contaminants	English	CD	-? For distribution to educators in region?
Nunatsiavut	Nunatsiavut Gov't.	2005	LIA HQ office	public?	summary of info by/ about	English/ Inuttitut	Folio with inserts	

TITLE	SOURCE	DATE	ACCESSED WHERE	TARGET GROUP	TOPIC/ THEME	LANGUAGE	FORMAT	OTHER
					Labrador Inuit & region during transition from LIA to Nunatsiavut Gov't.			
Canada's Food Guide	Gov't. of Canada	1997	Public Health	public	food guide	English	Info sheet	"food pyramid"
Revised Recommendations for Breastfed Infants	Health Canada	2004	Public Health	new mothers	promotes breastfeeding exclusively for 1st six months; recommends Vitamin D supplement for babies-1 year	English / French	Info sheet	
Research in Nunavik: Country Foods, Mothers' & Infants' Health	Nunavik Regional Board of Health & Social Services/ITK	No date	LIA Research	new mothers	promotes country food as healthy	English / Inuktitut (syllabics)	Info sheet	
Feeding Your Child Ages 2 to 5	? ('Quality Milk' logo on back)	Jan. 2003	Public Health	parents of 2-5 year olds	nutrition for kids after weaning	English	Booklet (small) w/holes for hanging up	
Building a Healthy Baby	Health Canada-Nutrition-Saskatchewan Region	March 2001	Public Health	pregnant / breast-feeding women	food guide for pregnant/breast-feeding women	English	Info sheet	-mimics Canada Food Guide

TITLE	SOURCE	DATE	ACCESSED WHERE	TARGET GROUP	TOPIC/ THEME	LANGUAGE	FORMAT	OTHER
Senior Health: Eating to Stay Healthy	Krames Communication (USA)	1997	Clinic, Nain	seniors	food pyramid for senior nutrition	English		
LIHC Annual Report 2003-04	LIHC (HQ)	2004	LIHC HQ HV-Goose Bay	LI public	annual report	English / Inuttitut	Booklet (full size)	
Saputjavik Treatment Centre	LIHC Nain	No date	LIHC HQ HV-Goose Bay	people concerned with addictions	addictions help in LIHC treatment programme in Labrador	English	brochure	Centre for addiction treatment
You, Your Baby and the Environment	Gov't. NL	(draft) 2005	Environ-mental Health office, HV-Goose Bay	pregnant women	effects of 'environment' (e.g. smoking, pesticides) on baby during pregnancy	English	booklet	-shown draft...foc-us on food poisoning, drinking water, gardening, pets!
Avativut Newsletter	LIA Research	Aug. 2004	LIA Research Office	All northcoast communities	info on environmental issues in region	English / Inuttiut	newsletter	
Breastfeeding Handbook	Gov't. NL Dept. Health & Community Services	1999	Public Health	pregnant womn / new mothers	breastfeeding	English	Booklet (full size) 45pp	-features blonde Kablunaat women on cover!
Baby's First Year	Gov't. NL Dept. Health & Community Services	"Revised 2002"	Public Health	pregnant wmn/ new mothers	breastfeeding; feeding baby from birth-12 mo.	English	Booklet (full size) 11 pp	

TITLE	SOURCE	DATE	ACCESSED WHERE	TARGET GROUP	TOPIC/ THEME	LANGUAGE	FORMAT	OTHER
Nunatsiavut (newsletter) Vol. 10, issue 1	LIA	Jan.-Feb. 2005	LIA HQ office	northcoast Inuit	Land Claims; regional events (e.g. Youth Symposium/ new LIHC day care)	English / Inuttitut	Newsletter (full size) 16 pp (each language)	
Bottlefeeding Your Baby: a time for closeness	Marianne Davenport, Childbirth Graphics (Waco, TX)	1995	Public Health	women who have 'decided to bottlefeed with formula'	formula bottle-feeding method	English / Español	Info sheet	
The Facts About Breast Milk	Pamela Browne	Feb. 1999	PH Public Health	pregnant women/ new mothers	Nutritional value of breast milk; benefits of BF	English	Info sheet	
Breastfeeding	La Leche League Inter-national	No date	Public Health	pregnant women/ new mothers	promoting BF	English / Español	Info sheet	
Babybuilding... Breastfeeding: A Timefor Good Choices	Childbirth Graphics (Waco, TX)	1995	Public Health	pregnant women/ new mothers	promoting good nutrition for mother during breast-feeding	English / Español	Info sheet	
Snacks Which Are Safe For Teeth	?	? (looks not recent)	Public Health	parents	snacks that do not decay teeth; emphasis on nutritional contribution of these snacks	English	Info sheet	
Why Is Nutrition So Important Anyway?	?	?	Public Health	pregnant women	specific nutritional	English	Info sheet	

TITLE	SOURCE	DATE	ACCESSED WHERE	TARGET GROUP	TOPIC/ THEME	LANGUAGE	FORMAT	OTHER
					needs during pregnancy (e.g. folic acid, iron)			
Healthy Mom, Healthy Baby	? "p. 53"	?	PH Public Health	pregnant women	diagram of good nutrition for pregnancy	English	Info sheet	
Finger Feeding	p.11-12 of Dr. Jack Newman Handout #8	1996	Public Health	new mothers	breastfeeding technique	English	Info sheet	
Breast Compression	Dr. Jack Newman's Guide to Breastfeed-ing Handout # 15	Re-vised Jan. 2003	PH Public Health	new mothers	breastfeeding technique	English	Info sheet	
Slow weight gain after the first few months	Dr. Jack Newman's Guide to Breastfeed-ing Handout #25	Revised Jan. 2003	Public Health	new mothers	promoting breastfeeding; addressing baby weight concerns	English	Info sheet	
Cupfeeding Guidelines	p. 8-9 of Dr. Jack Newman's Guide to Breastfeed-ing	After 1997	Public Health	new mothers	promoting breastfeeding; addressing ways to feed with breast milk via cup	English	Info sheet	
Pound Off: Healthy Eating & Active Living Club	Public Health	Feb. 2005	Clinic Nain	adult public Nain	weight loss club with info sessions and weigh-ins	English / Inuttitut	Poster (advert)	
Saglek and Your Health	LIHC	No date	LIA research office	public on northcoast	PCBs at Saglek;	English and Inuttitut	Fact sheet	

TITLE	SOURCE	DATE	ACCESSED WHERE	TARGET GROUP	TOPIC/ THEME	LANGUAGE	FORMAT	OTHER
					safety / health related to Saglek			
Making Children's Lunches...easier to swallow	NWT Health and & Welfare Canada	1983	Public Health	parents of young/ school-aged children	nutritional values of wildfood and other choices for lunches; recipes	English	brochure	-features Inuk child on cover
Feeding Your Toddler: A Guide to Eating Well for 1-2 Year Olds	Health & Community Services (NL)	2002	Public Health	parents of toddlers	nutrition for toddlers based on Canada Food Guide; tips for healthy eating/snacks	English	-info sheet (folded) 4pp	
You, Your Child, And Food: A Guide to Eating Well for Preschoolers (age 2-5 yrs)	Gov't. NL Dept. of Health	No date	Public Health	parents of preschoolers (2-5 yrs)	tips for developing healthy eating habits	English	-info sheet (folded) 4pp	
Four Star Lunch; Our lunch Needs	Gov't. NL Dept. of Health	No date	Public Health	guide for young kids (to fill in and colour)	nutrition for toddlers based on Canada Food Guide; tips for healthy eating/ snacks	English	brochure	-cartoon style info and colouring pages
Love Your Heart: Encouraging Healthy Inuit Hearts (Book 3 in series)	Pauktuutit Inuit Women's Assoc. Ottawa	2002	Clinic Nain	guide for Inuit (national) concerned about heart	guide for Inuit "about preventable heart diseases" (e.g. lifestyle	English / Inuktitut (not regional dialect)	Booklet 16pp	-super!

TITLE	SOURCE	DATE	ACCESSED WHERE	TARGET GROUP	TOPIC/ THEME	LANGUAGE	FORMAT	OTHER
				disease	choices)			
Children with Asthma: Air Pollution and Your Health; Air Pollution and Seniors' Health	Canadian Public Health Association	Before June 2004	Environ-mental health office HV-Goose Bay	Parents seniors	air pollution information (esp. for vulnerable groups)	English / French	Brochure (series)	
5 to 10 A day: Are You Getting Enough?	Canadian Cancer Society	No date	Dietician office HV-Goose Bay	public	promoting fruit & vegetables (for lowered risk of cancer; heart disease, stroke)	English	brochure	
Eating for the Good of Your Health	Canadian Cancer Society	1997	Dietician office HV-Goose Bay	public	promoting healthy diet tips (to reduce risk of cancer)	English	brochure	
Drinking Water Awareness (series)...What You Should Know About: Lead; Cross Connections; Roadside Spring Water; Chlorine and THMs; Home Drinking Water Treatment Units; Arsenic	Gov't. of NL Dept Health & Community Services	2002 and 2003	Environ-mental health office HV-Goose Bay	public	promoting understanding of drinking water risks	English	brochure	
Sheshatshiu Innu Integrated Diabetes Initiative	Sheshatshiu Innu Health Commission	No date	Diabetes office HV-Goose Bay	Innu with diabetes	advertising Innu programmes for help with	English / Innu-aimun	brochure	-lack of similar info for region's

TITLE	SOURCE	DATE	ACCESSED WHERE	TARGET GROUP	TOPIC/ THEME	LANGUAGE	FORMAT	OTHER
					diabetes			Inuit???
Food Safety Tips for Eggs	Canadian Food Inspection Agency	No date	Environmental health office HV-Goose Bay	public	egg safety!	English	brochure	
(wildfood/contaminants info game)	Yukon Contaminants Committee	No date	LIA Research	Public kids educators (tool)	health risk info related to contaminants in wildfood	English	folded paper game	-great tool! -in LIA office as sample of what could be done?

APPENDIX F: DATA ANALYSIS CATEGORIES

Analysis Category 1: MESSAGE

▪ **is the information balanced: does it include both risks and benefits (e.g. gathering and consumption of wildfood has both r/b)**			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ it is "not as simple as wild food is good for you" Q6 HC7 EC5 quote 152 this respondent says that messages have tended to be all risk or all benefit messages	▪ FG all agreed that wildfood is still a good source of healthy nutrition *but 4 seemed unclear of 'bottom line' about safety...this indicates they are not sure about the level of risk/benefit* ▪ Esp. youngest (high school aged) women had many questions about caribou, Saglek, PCBs, mentioned cancer ▪ mention of awareness of risks: 2 ▪ feel it has benefits / do eat it: 6	D1: LIA Research newsletter 'Avativut': clear risk and benefit message (not local brochure but seen at LIA research office) Nunavik clear risk and benefit D25: Saglek poster included both risk and benefit message D13: breastfeeding: benefits only D29: LIA Research Traditional Food Calendar: only benefits only of T/F included All others: 0/0	▪ *Inuit Tapiriit Kanatami posters and Labrador Inuit Association Research info indicated both risks and benefits of wildfood consumption*
▪ **is the message at an appropriate language level for target group(s)**			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ 6 respondents replying to this question said that WCBA and/or teens need targeted message ▪ 1 respondent said "it's a tough group" (teenagers)... their	▪ *comments were made about school curriculum and other programmes that were presented in school [to the FG participants of this age] using props and slides, which they described as being*	6 key documents, including 'Avativut Newsletter' D1 and 'Baby building...Breastfeeding: A Time for Good Choices' are at appropriate language levels for their audience (D1, D2, D3, D4, D22, D29)	▪ *the information in pamphlets from public health was either too brief and often not detailed enough, while other hand-outs were very long and seemed overwhelming to the FG participants (e.g. two FG*

general understanding of risk, health and nutrition issues is an issue for the communicators and healthcare workers ▪ "need to reiterate risk…and get them to really understand full implications of diet" (referring to diabetes in particular) Q6e HC13 ▪ three KIs said that when programmes (messages/tools for them) are developed from the community rather than top down, they can be more appropriate, locally relevant and are more successful Q7b EC2 ▪ *[note: not asked directly]*	*effective…e.g. the smoking education programme used photos of diseased lungs and this impressed them with the gravity of the health risks*	-some of the most easily understood documents used images (and did not rely just on words)*…:Traditional Labrador Foods' D30 (these seemed to appeal to the FG)* (D1, D17, D22, D29, D30) complex language level 'Breastfeeding' D5, D9, 'The Facts About Breast Milk' D13, 'Revised Recommendations for Breastfed Infants' D24, (D5, D9, D13, D16, D24, D27) also several were very lengthy (a quality that was disparaged by a few FG participants) and others were 'old' (not up-to-date or modern in style or language) *complex language used in other brochures also e.g. in water series*	*participants—both of them mothers-to-be-- commented on the lack of useful information in the pamphlets and the length of booklets)*
▪ is it clear what the intent of the message is (e.g. is it a health advisory)			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ "it Is not as easy as "native food is good for you" …the clear communication of both risks and benefits requires continuous messaging Q6g HC7	▪ an example that was *mentioned were school programmes about smoking that "scared a lot of people", these were seen as informative and effective in educating*	-a good example is D25 (Saglek)= it says that it is an advisory on an area PLUS it is informative about safe wildfood harvest areas	▪ *most of the information in the community is meant to be informative, rather than an advisory…some people seem to think that all wildfoods information relates to the*

▪ people are aware that they should not hunt / fish / gather certain wildfood species near contaminated areas (e.g. Saglek) = there have been clear educational material and advisory poster in the communities EC1 Q5a	*people about the health risks of smoking (not on this topic but good example of their experience with messages)* ▪ high school aged focus group participants said that classroom messages are clearly meant to "tell us how to raise/take care of a child" HS18 Q9 ▪ and to show you how to eat healthy "and all wild meat" Q 9 MM21-1 ▪ PCBS in Saglek mentioned by 1 FG participant…this information was clearly seen as an advisory not to hunt/eat from there	*-all other documents were clearly 'information-based' (not advisories)…e.g. on general nutrition (etc.) info*	*contaminants issue and therefore may see the info as an advisory initially*
▪ is the source (of the material) identified clearly (this is also in Communicator section—is it clear whose message it is)			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ *most KIs indicated that the information that they distribute is identifiable, though some (PH, LIHC) do hand out info from other sources, or materials that are not produced specifically by them, in which case the source is sometimes not clearly identifiable nor is the*	▪ mentioned LIA and LIHC, also 'They' which referred to an NCP (ITK) community tour ▪ also curriculum or class teacher ▪ *when 'message delivery' is done directly by a person (not*	▪ 13/32 did not have sufficient information to understand the source (one was a logo, six were a name only), ▪ had clear contact info: 13/32 ▪ no contact info: 30/32 ▪ 4 said to "contact nearest office" and gave out of region contact info	▪ *about half of the materials were identified but especially the FG remained somewhat uncertain as to whose message it was (PH, LIA etc)* ▪ *NOTE: much of the material distributed in the communities has been produced by the*

information as relevant to the local experience ▪ *teachers use the widest variety of sources, from locally-sourced (PH, LIHC) to websites to curriculum guides, DVDs etc. ...*	*via written material), FG participants usually identified the local agency as the communicator (e.g. S.E. from LIHC did a presentation in school)...but the high school - aged participants seemed unclear who the 'communicator' was at Open Houses (e.g. NCP tour)* ▪ *sources of print materials, were not mentioned by the FG participants – with the exception of LIA research*		*province (Newfoundland & Labrador), or even by branches of the federal government Q4a-b EC2 quote 105* ▪ *the primary reason that i.d. of messager is important is so that recipients of info know where it came from and can ask further questions or get clarification (e.g. of nutrition guidelines as it pertains to wildfood, etc.)...so the local utility of provincial and federal materials is limited, and often does not provide a realistic way to contact anyone...*
▪ is the information available in an appropriate local language / dialect			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ Ki commented on the 'promotion of benefits of healthy food', said that: "translation was always an issue...(limited information available that is) using our culture, point of view, language, way of life" Q4a EC2 quote 101 ▪ interpreters are always available at the clinic for translation into local Inuttitut	▪ *none speak Inuttitut (though some understand some of it). All of their communication is in English*	▪ OK radio/TV material-"yes" ▪ LIA research office amterial (posters, newsletters)- "mostly" ▪ LIHC material- "mostly" ▪ 6 documents were available in (relevant dialect or) Inuktitut	▪ *KI interviews: several said info does not need to be in Inuttitut for this target group, meanwhile all LIHC, LIA materials are translated* ▪ *also Nain Town Council info is in both English/Inuttitut* ▪ *information in Inuttitut may not be 'necessary' for this target group, but if all generations have access to it ,*

language Q2 HC9 ▪ KI said there is approximately "half-time translation" of materials…so that only half is available in Inuttitut Q9 HC10 ▪ *one exception is OKalaKatiget radio/TV : nearly all programmes are broadcast in both English/Inuttitut, so any health information that comes through the radio locally is / or can be in local language (there is little if any health-related programming now and the KI from OK says it would be welcome if provided to them by the health agencies)*			*it can promote inter-generational communication around these topics (health, wildfood, pregnancy nutrition, etc.)…e.g. my health study recruitment posters in both languages also allows elders to know who is in town and what the study is about…*

Analysis Category 2: CONTEXT / FRAMING

▪ **does message include (or somehow take into account) local perspectives**			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ many messages do not: "(lack of) translation was always an issue…using our culture, point of view, language, way of life" Q4a EC2 quote 101 ▪ LIHC does an Inuit food programme info for K-3 and HS HC9 ▪ Traditional Labrador Foods (wildfood) guide (LIHC) is now promoted (D30)	▪ 3 specifically mentioned LIA research office information (D29) as incorporating local perspective ▪ Traditional Labrador Foods (wildfood) guide (poster) by LIHC (D30) Q4 NM ▪ *note: FG were not asked this directly*	▪ Traditional Labrador Foods (wildfood) guide (LIHC) D30 ▪ *example of messages that do not: many pamphlets are produced in St.John's NL (Health & Community services)—and are general for whole province… HC11* ▪ 11 do at least to some extent ▪ 'Traditional Foods Calendar' D29 is an example that includes local perspective (also D22, D24, D30)	▪ *2 KIs (primary teachers) mentioned that school does not really cater to kids being able to miss school for hunting…not valuing their Inuit lifestyle...I have heard people discuss other Northern communities where time on the land is accommodated better with work and school, e.g. having school spread out all year to accommodate seasonal travel for hunting/gathering… even if messages take local perspectives into account, the ability to hunt and gather wildfood is limited for many reasons* ▪ *many LIHC materials (e.g. Traditional Labrador Foods Guide and anti-smoking posters) were lost in a fire that consumed LIHC in Nain)…I saw examples of these materials but they were not necessarily present in the communities at time of study*
▪ **is it appropriate to local context (e.g. takes into account local customs, reality of food access, uses imagery relevant to culture, etc.)**			
Interviews	Focus Groups	Documents	Participant Observation notes

▪ many materials display lack of relevance to local context "translation was always an issue...(lack of materials) using our culture, point of view, language, way of life Q4a EC2 quote 101 ▪ 1 mentions LIA research office newsletter, CINE and media (calling attention to contaminants issue) Q5b HC17 ▪ several KIs said there is material in English/Inuttitut available, such as the LIHC Traditional Labrador Foods posters (D30) Q6 HC14 ▪ quite a few of the hand-outs are not appropriate to local context and "people get turned off by material" not from area... Q6i EC2 ▪ in addition, certain formats were seen by several KIs to have no appeal to certain groups or relevance in region as a whole (e.g...."booklets are not right for elders") Q6i EC5 quote 440	▪ mention of LIHC cooking class (which used locally available food) ▪ LIA research newsletter (D1) mentioned ▪ LIHC Traditional Labrador Foods posters (D30) mentioned	▪ *posters / magnets by ITK* ▪ *LIHC Traditional Labrador Foods posters (D30) [see PO column]* ▪ 5 documents, including 'Traditional Foods Calendar' D29 were local to Northcoast 'is an examples that is based on local context D1, D24, D25, D30	▪ *posters / magnets by ITK were present in community but there was no evidence of their distribution to other communities* ▪ *LIHC Traditional Labrador Foods poster also seen D30* ▪ *ITK and LIHC posters seemed only to be at LIA HQ although I was told they were posted elsewhere at one time and they get ripped down* ▪ *anti-smoking posters used local people's photos and comments and were mentioned by most FG participants and several KIs as examples of good, locally relevant health information* ▪ *NOTE: although some cited materials about wildfood and contaminants that were available in local context, it was brushed off by some KIs as not important...several EC/HC said that people are not concerned about contaminants (though perhaps a little 'confused') because*

▪ *LIHC Traditional Labrador Foods posters (D30) mentioned several times by KIs*			*they have other worries like food access, diabetes, social problems, alcohol abuse, poverty etc.*
▪ is the target group's existing risk perception on this topic known and considered in the message development and delivery			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ *[see PO column]* ▪ TG teen girls "don't want to hear it" (info on health/risk)...they think they are "invincible" and do not understand health risks Q6e HC11 ▪ teens need targeted information (that takes their attitudes into account)...mention of attitude of "I don't like that" about healthier foods...they prefer "junk" Q6e HC11 ▪ "teens are bombarded with TV" messages promoting less healthy foods Q6h HC14 ▪ *no mention of any way in which this is evaluated by health professionals or educators, etc...*	▪ school programmes address health issues in their curriculum, which is ostensibly designed for the target group it reaches... ▪ *not asked, no evidence of it*	▪ NOT ASKED ▪ *no feedback on this...no observation of previous research or interest in this by KIs who develop and deliver this kind of message...*	▪ *seems to be a lot of confusion about contaminants, nutrition in general and prenatal nutrition specifically...e.g. FG mentioned specific unaddressed concerns (aspartame, rotten food, Saglek, migration of caribou through Saglek, caffeine intake, fish intake, milk intake, 'grease')* ▪ *as far as I could tell, no one has done interviews (like these) to determine their concerns and perceptions before developing / delivering TG message...or doing evaluation later with them* ▪ *there has been some discussion of this in the Youth Forums...asking this TG to discuss their needs and understanding on a variety of topics (e.g. their ideas about*

▪ *several comments by KIs saying that this TG as being tough to communicate with on any topic, but especially the comprehension of behaviour (choices) and health risk*			*suicide prevention and abuse) but it was suggested that although "we give the youth a chance to speak (we do) not to act on it" (e.g. the community leaders, LIHC, etc. do not carry through with their ideas of what to do) Q7c (notes) EC5*

Analysis Category 3: PATHWAYS / NETWORKS

▪ **is message delivered via pathways / networks used by target group**			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ *prenatal/postnatal nutrition/health info is delivered via PH (CPNP), doctor, LIHC CHWs, LIA newsletter, LIHC posters/Inuit food guide, store (Healthy Living in-store promotion) ...this target group have obligatory appointments with PH and doctor* ▪ this target group also gets message via these pathways: school breakfast program, school curriculum (HS science), annual foods/cultural day, LIHC Inuit food programme in K-3 and HS (2-3x yr)	▪ the high school aged TG get message delivered via school (compulsory) and when they do research for school assignments, they use other pathways assignments (e.g. internet: Health Canada website mentioned) ▪ FG participants say that they "know where they can get information" but several mention some places are not reliable to do with availability of information they are seeking (PH, clinic, doctor, and prenatal classes all are mentioned) ▪ first-time mothers-to-be	▪ *posters, pamphlets are available in places that TG uses (note: they say that pamphlets don't appeal to them)* ▪ *pathways that were suggested: youth-produced video (idea from LIHC and Piguttuk Family Resource Centre); radio; youth-produced drama [I will address these suggestions in the discussion section of thesis]* ▪ [not asked directly]	▪ *although many FGs / KIs mention the LIHC and ITK posters as being "good", some FG say but "you don't see people standing around reading the walls" NM19 #458* ▪ *KI deliver the message in many locations/pathways but do not seem to have much idea if it is where TG 'wants' to get the info—KI express general attitude of "it is there if someone asks"* ▪ *young people listen more if it's coming from someone their own age EC5 Q7c notes # 310*

▪ one KI pointed out that some information (LIA newsletter; Town Council newsletter) goes to all households directly via town mailboxes but also pointed out that many pamphlets delivered this way are not read (or at least not taken home to the rest of the household) …they get discarded in the post office lobby ▪ two KIs mentioned LIA culture camps (which include youth and elders) these are trips 'on the land' …away from the community, where youth learn various skills in an intergenerational, hands on setting … as such, culture camps deliver messages via a unique pathway…emphasize cultural value of wildfood; teach skills related to hunting, skinning, cooking…	especially mention PH/clinic as often unavailable (not replying to calls) although this is where they seek information related to prenatal health ▪ places that the focus group participants say they look for info: school 10 LIHC 8 Hospital 2 PH 4 LIA research 4 Internet 2 Friends 2 TV 3 Family 2 Piguttuk 1 ▪ 3 also mention science teacher, post office as possible sources		
▪ is the message delivered taking into consideration competing messages on this topic from other sources (e.g. does the communicator do anything to take this into consideration, such as correct other messages)			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ [not asked directly] ▪ there is some concern (among	▪ [not asked directly]	▪ [not asked directly] ▪ an example of a document that	▪ *level of confusion about "bottom line" on health and safety of wildfood--especially*

KIs) that there are other messages 'bombarding' youth via TV (etc.) and that counter messages "needs to be consistent to be graspable"...and easy to access...Q6 HC16 quote 327 ▪ *1 teacher used the film 'Super Size Me' to educate students on how they are being encouraged to eat in an unhealthy way...and to facilitate discussions about ways they can make healthy choices in the community and while travelling (e.g. drama group trip to NWR, HV-GB)* ▪ *no indication that other messages are taken into account when developing new materials*		does is the advisory on hunting restrictions around Saglek (D25) ▪ an example (though not from this region...note: was found in LIA research office as an example to be used in developing regional messages!) is Nunavik message 'Mothers and Infants Health' which clearly responds to other messages...	*amongst younger women in focus groups--seems to indicate that the messages are not adequately clarifying previous (or competing) messages...earlier messages Do seem to have been received as advisories / warnings*
▪ are the tools in locations that are accessible by target group(s)			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ KI mention many 'accessible locations' but also a few admit that some of these are not used by TG ▪ several KIs indicate that the "information is out there" *(but this does not mean that the*	▪ FG generally say that information is available but they also say that locations are not that appealing: e.g. post office was suggested because someone is always there but is not private, "postings at the clinic" {482}..."stick it on the	▪ [not asked] ▪ *tools / documents found to be available mainly at public health, clinic, LIA research office, Happy Valley-Goose Bay clinic, formerly at LIHC**	▪ *local hangouts (e.g. sportsplex, community hall) have had some posters...(these do get ripped down frequnetly)* ▪ *most materials seem to remain within LIA research office (and posted in LIA bldg) and*

information is easy to access or in a relevant location for the target group)...especially mentioned by those in agencies that are expected to deliver this information Q7a EC2 ▪ *school (via curriculum / individual teachers) was relied on by KIs as being a major source / foundation of health information...*	doors in public bathroom" { 473}; {NM19, MM21 #458-482} ▪ *PH office was cited as often closed and that pamphlets are unavailable outside the office when they drop by (concern of mothers-to-be mainly)...more materials could simply be available in public spots (racks outside offices, etc.)*	▪ **NOTE: due to recent fire, at the time of this study there was no Nain LIHC office location and few LIHC documents in the community*	*are not widely distributed to other communities*

Analysis Category 4: COMMUNICATORS

▪ **is the communicator easily identifiable (e.g. media, academic, government, local agency, internet, family, friend, health professional, teacher)**			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ [not asked directly]	▪ yes (the FG participants were clear about who was communicating the messages in the community (e.g. PH, clinic, LIHC, teachers) ▪ high school-aged FG participants mentioned TV—and discerned between 'educational' and commercials ▪ *FG participants easily identified local agency if a (live) presentation was done in school (e.g. "Jane Doe from LIHC did a presentation in school")...but it seemed they were unclear who was doing Open Houses or other public events (e.g. NCP tour)*	▪ *sources of print materials were not mentioned by FG participants, except for those by LIA research office* ▪ *NOTE: see last bullet for more details...a survey of the materials found:* ▪ 13/33 had clear identification on docs (such as contact info) ▪ 25/33 had no clear source ▪ 4 indicated that for further info "contact nearest office" (and listed out-of-region locations, or no telephone numbers or websites)...	▪ *FG participants seemed to understand who the communicators were, and at least a few of them assumed the documents they received from local agencies were 'by' these communciators*
▪ **is the messenger a recognized and trusted source of information for the target group**			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ [not asked] ▪ see PO column ▪ *each KI said or implied that they were a trusted source of good information for the TG*	▪ 1 youth remarked "I don't think we get enough info about healthy foods from our families as we should..." (NM #92] whom they trust but who either do not know or do not share this information with	▪ [not asked] ▪ *the messengers were trusted and the materials they handed out were accepted as 'endorsed' by them...*	▪ *some KIs knew they were not the ideal source for the info for the target group...and (e.g.) think more should be done in the schools and via "role-modelling" by peers, rather than rely on*

	them (loss of intergenerational communication on this topic) Q5 HS ▪ yes: LIHC, PH, prenatal classes, mentioned by mothers and non-mothers as trusted / recognized source of this information Q8 NM MM ▪ high school students in FGs said they would go to a science teacher for more information (4 of 5) Q25 HS ▪ also mentioned: hospital (clinic), nurses (2 of 5) ▪ "my mom", then LIA research 2 of 3 Q25 NM ▪ LIA, then hospital (1 of 3) Q25 NMs ▪ research on computer (1 of 3) Q25 NM	▪ *of the 6 docs that were exceptional, 4 were locally produced (LIA research, LIHC), note that one was by Pauktutit (Ottawa-based Inuit women's organization) and one (Nunavik Reg.Bd.Health SS/ITK) ...not "known" sources for public in Nunatsiavut* ▪ *several documents (pamphlets, booklets) were made by national / international groups (e.g. La Leche League) which are not necessarily recognized and / or do not have a reputation as 'trusted' locally (but in Spanish! ?c'mon!)*	*'information/messaging' HC14* ▪ *EC3 (a teacher) made an effort to be a trusted communicator and role model on health topics…*
▪ is the source (of the material) identified clearly [this is also in Message section—is it clear whose message it is]			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ [not asked]	▪ [not asked] ▪ e.g. LIA research office info	▪ 13/33 did not have sufficient information to understand the source (1 was a logo, 6 were a	

▪ *the agencies who do education / communication / programmes had materials from a variety of sources and it is unclear who the source is...even the KIs did not know where some of the materials they used originated (e.g. photocopies of a brochure that was deemed useful by previous PH nurse)*	about Saglek D25 mentioned, TG clear where it came from Q20 HS, NM ▪ *when delivery is specifically by a person, FG usually identified local agency (e.g. "Jane Doe from LIHC did a presentation in school")...but it seemed they were unclear who was doing Open Houses (e.g. Northern Contaminants Programme tour)* ▪ *but sources of print materials, except for LIA research were not mentioned at all by FGs*	name only) ▪ had clear contact info: 13/33 e.g. "Avativut Newsletter' D1; "Love Your Heart: Encouraging Healthy Inuit Elders' D22; Saglek and Your Health D25 (others: D5 ▪ no contact info: 30 /33 ▪ e.g. 'Feeding Your Child Ages 2-5' D14; Canada's Food Guide D10 (!); 'Baby's First Year' D3 (D2, D4, D7, D8, D13, D15, D27, D28)D31 ▪ 4/33 indicated that for further info "contact nearest office" (and were out of region, no numbers, websites) e.g. 'Building A Healthy Baby' D8, 'Baby's First Year' D3	

Analysis Category 5: MATERIALS / TOOLS / PROCESS

▪ **are the materials / tools used by the target group(s)**			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ [not asked] ▪ one KI said: this (teenaged girls) is a tough group …"young people, school age kids, don't even hear you" (so message in any form is not 'heard' especially when it is competing with television, which "bombards them with messages promoting less healthy foods" HC14 #235-254 ▪ pamphlets do not appeal to many, such as high school aged FG participants (e.g. in post office and hospital, pamphlets end up in garbage) *(more here)* ▪ locally relevant posters are good, can be related to *(more here)* ▪ 3/18 no response ▪ 5/18 were uncertain 'if any info is available on this topic in the community'…	▪ all 4/4 high school aged FG participants said they would read / use the information if accessed / given to them at school Q3 ▪ if (members of FG) look for / seek the material (accessed at LIHC, LIA research, hospital), they use it Q3 (high school aged FG respondents, NMs) ▪ the information "is easy to access" but pamphlets end up in the garbage (most said this in group HS, NM, MM) ▪ younger FG participants (non-mothers) mentioned wanting access in places that were more private…in part so they could ask questions…and said that the available information was not always what they were looking for	▪ NA	▪ *posters do not remain posted very long in public places (combination of being torn down and of need for the space for other info, e.g. store entryways are public bulletin areas for community announcements and events)* ▪ *I observed many boxes of undistributed materials in LIA research and public health offices* ▪ *items put into town mail (free bulk deliveries of public notices and so on) often ends up all over the floor or in rubbish at post office* ▪ *posters etc. could be in washrooms (one NM suggested this) and at arena (recreation dept controls this)* ▪ *NOTE: FIRE MARCH 2005 RESULTED IN LOSS OF LIHC OFFICE AND MATERIALS…*

▪ 7/18 did not identify any places where it could be accessed ▪ 14/18 had specific suggestions of locations/media to inform TG Q7a-b ▪ 1 said no, 1 said don't know			
▪ does the process provide for two-way communication (e.g. presented in a format that allows for a response, etc.)			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ [not asked] ▪ *this area of questioning was not direct and zero KIs mentioned any pre-testing, communication about materials etc...*	▪ [not asked] ▪ *no one mentioned being part of this process or giving their thoughts about or responses to materials to anyone...*	▪ *no evidence of this* ▪ *insufficient contact info on most documents and little opportunity for TG (users of info) to even contact message-makers...* see Category 4	▪ *this area of questioning was not direct and zero participants in either group mentioned any pre-testing, communication about materials etc...* ▪ *this is of great concern... based on the literature, this is key...*
▪ is the communication material pre-tested or field tested (each event)			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ [not asked] ▪ the (related but indirect) question that was asked "how do you know if this info delivery has worked?" Q7b: 1/18 said "you don't know" 2/18 did not reply	▪ [not asked] ▪ *no one mentioned being part of this process or knowing where they could give input...*	▪ NA	▪ *this area of questioning was not direct and zero participants mentioned any pre-testing, communication about materials etc...* ▪ *this is of great concern... based on the literature, this is*

9/18 mentioned behavioural indicators such as (observing) 'kids not eating junk food' ▪ 0/18 mentioned built-in feedback process in materials			*key...*
▪ is the communication strategy designed with an evaluation process built in (each event)			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ [not asked] ▪ 0/18 mentioned built-in feedback / communication strategy process ▪ *NO evidence of it*	▪ [not asked]	▪ *no evidence of this, little opportunity for user TG to even contact message-makers...there are very few documents with contact info for any response by educators or users...*	▪ *this area of questioning was not direct and zero participants mentioned any pre-testing, communication about materials etc...* ▪ *this is of great concern... based on the literature, this is key...*
▪ is evaluation regularly carried out			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ [not asked] ▪ *0/18 mentioned built-in evaluation process*	▪ [not asked]	▪ NA	▪ *this area of questioning was not direct and zero participants mentioned any pre-testing, communication about materials etc...* ▪ *this is of great concern... based on the literature, this is key...*
▪ is feedback regularly incorporated into changes to the messaging / materials			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ [not asked] ▪ *0/18 mentioned built-in*	▪ [not asked]	▪ NA	▪ *this area of questioning was not direct and zero participants mentioned any*

evaluation process			*pre-testing, communication about materials etc...* ▪ *this is of great concern... based on the literature, this is key...* ▪ *overall comment : this is an important are to discuss in thesis, for recommendations for future research and, more practically, as an important part of the messaging process on future health risk information for the region (see literature!)*

Analysis Category 6: COORDINATION

▪ **is there coordination (amongst organizations) behind the communication strategy, including development of the message**			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ LIHC & LIA ▪ Q7a-c EC2 this KI mentioned a 'partnership' idea between organizations who work with WCBA such as (e.g.) Public Health / Piguttuk Family Resource Centre. Piguttuk already has health issue "theme" months, and they give out personal invitations to events that are for people in target group…(e.g. to all pregnant women in community; all elders) ▪ one KI said this may not be the case and that it is vital that "all agencies need to sing same song…then somebody gotta hear it!" Q7a HC16 quote 309 ▪ *message / material development seems to only originate from--and be approved by--LIHC HQ (not local community initiatives) …some KIs commented on this as restrictive, unsupportive…*	▪ [not asked directly] ▪ *no comments were made about this*	▪ NOTE: *charts / annual reports from the organizations show the structure of organizations such as LIA / LIHC…* ▪ *some of the documents can show if organizations are 'singing same song' or not (see quotes from KI INTERVIEWS)* ▪ *LIHC and LIA research have overlapping information about traditional foods (LIA research office newsletter/ Labrador Traditional Food guide) D1, D29, D30…but there was little (no?) evidence of coordination of a communication strategy…* ▪ *Saglek documents are an exception, being distributed and promoted by LIA and written with the coordination of LIA research, LIHC, LIA HQ and translated into local Inuttitut 'Saglek and Your Health' D25*	▪ *LIHC in HV-GB (the HQ) seems distant from the community health workers, may not be fully aware of who is doing what (in relation to education / communication) on the ground in the community…*

▪ **does message come from more than one communicator / source when it is disseminated into the community** o **if so, is message consistent (e.g. coordinated for consistency)**			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ sources of message in communities (listed below) …more than one communicator and not consistent message: ▪ in summary: *yes more than one source and no, not coordinated…* ▪ LIHC via community health workers CHW (part of LIA) ▪ LIA research office (part of LIA) ▪ ITK community tours (includes LIA research but also outside communicators ▪ researchers ▪ *OKalaKatiget radio sometimes uses (health-related) material directly from LIA* ▪ other media (TV, internet) have other agendas (sales,	▪ [not asked directly] ▪ NA ▪ *no comments were made about this*	▪ *no evidence of coordination* ▪ *PH is primarily breastfeeding and infant, toddler care…NO info on this as related to wildfood or even much about nutrition R/B of available foods…Canada Food Guide (even adapted one for 'aboriginals' is not relevant…dairy focus, store foods) D8 D10.* ▪ *occasional image of deer or fish (but not caribou, seal, birds etc) etc)…* ▪ *LIHC food guide is a revision of Canada Food Guide for Nunatsiavut customary diet…breaks it down to four colour codes to indicate how these foods are beneficial to aspects of health ("strong bones and teeth, strong muscles, for good eyes, skin and less infection, for energy") does not discuss*	▪ *seems to come from several sources or at least is inconsistent in final messages…confusion amongst Target Group…*

selling news!) ▪ Canada Food Guide (not related to any local guides or local food sources) distributed widely		*risk/benefit or relation to other materials available ... D30*	
▪ does a local organization(s) or communicator have the mandate to communicate / educate on this issue			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ *yes, LIA research and LIHC cover theses topics within their mandate but there is no evidence of related training / education to do so* ▪ *yes public health and CPNP are responsible for prenatal classes and care (e.g. prenatal, neonatal and breastfeeding information)* ▪ *science / health teachers (in Nain high school) are responsible for some health topics in their curriculum, though they do not have the mandate or necessarily the training to communicate this and relate this to local context / diet*	▪ [not asked directly] ▪ NA ▪ *no comments were made about this*	▪ *-see KI column* ▪ *from organizational charts:* ▪ *LIHC and LIA research documents indicate an effort to communicate on this topic (Note: there is, as of 2006 ? a Environment Dept. of Nunatsiavut Gov't)...* ▪ *note that communication and materials are not a big part of LIHC budget or effort...*	▪ *-see KI column* ▪ important to lead by example, e.g. serve healthy foods at local events etc. "You don't see people saying 'Have this lovely apple, or 'you should drink water' " 248 "it's all advertising the products. Every sports event...it's cheap" HC14 253-264 ▪ "I think that everything we (LIHC) do should reflect healthy eating. We should be handing out water and fruit and healthy things instead of giving kids box-drinks with No nutritional value" ..."we need to 'talk the talk' AND 'walk the walk' " HC14 216
▪ is there communication within and between relevant organizations (or departments of an organization) on this topic, including across sectors (e.g. NGOs, LIA, LIHC, province, etc.) and is this included in the development and delivery of the message			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ LIHC–related KIs say yes...	▪ [not asked directly]	▪ *see KI responses*	▪ *some lack of communication*

▪ *but no evidence of this in development of message...* ▪ *local community-level health workers (CHWs) find that LIHC head office controls programmes, materials...*	▪ NA ▪ *no comments were made about this*	▪ *in analysis, look at organizational charts...indicate where this could occur...*	*and disconnection between arms of LIA (LIHC and LIA research, e.g.)* ▪ *complete disconnection between clinic, PH and LIHC...to the extent that no prenatal classes occurred for at least 10 months in Nain and no one stepped in to solve this...*

Analysis Category 7: CAPACITY (MESSAGE COMMUNICATORS)

▪ **does the communicator organization have trained and educated individuals on these topics**			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ LIHC says yes...community health workers (CHWs) fulfill this role Q3 ▪ also e.g. dietician in GB works with regional nurses on dietary issues such as cholesterol, diabetes HC8 Q3a-b #101 ▪ KIs from LIA says yes (referring to LIA research office) ▪ schoolteachers do some communication on this topic in the science and health parts of their curriculum, note that there is no evidence of training specifically on (local) health topics	▪ NA	▪ NA	▪ *community health workers (CHWs) (part of LIHC)—"as much as they are motivated to" (KIs in LIHC) get training* ▪ *many people in these roles ...(e.g. nurses, CHWs) have too much to do to keep up on this topic...they must focus on more urgent issues like diabetes management, eldercare...*
▪ **are there people from these organizations whose mandate it is to inform / educate on this topic**			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ yes: LIHC CHWs, LIA research ▪ PH nurse (delivery of CPNP prgrammes etc.)	▪ NA	▪ NA	▪ *community health workers (CHWs) (LIHC)—"as much as they are motivated to" (KIs in LIHC) get training* ▪ *many people in these roles*

▪ clinic nurses, doctors, dieticians ▪ Piguttuk Family Resource Centre to some extent Q3 ▪ "information and professional help is available…at LIHC, social services, hospital" EC1 Q3b ▪ *note that clinic sees people who are unwell, not their mandate to do health promotion or give out information on this topic* ▪ *secondary schoolteachers (in generalized way—not mandated and not necessarily trained or interested in how information relates to local context)*			*…(e.g. nurses, CHWs) have too much to do to keep up on this topic…they must focus on more urgent issues like diabetes management, eldercare…*

Analysis Category 8: CAPACITY (MESSAGE RECIPIENTS)

▪ **is local population educated on the topic**			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ although many (in TG) are "familiar with topic"...they reflect some confusion...most recent education experience is the easiest to recall ▪ "quite often misconceptions" HC 12 #669	▪ *most people (in FG) are aware of / have heard of the 'issue of wildfoods and contaminants' but with wide variation in level of understanding* ▪ *e.g. Saglek mentioned (in FG) as area of concern...one FG participant used the word 'pollution' (for contaminants) and then said "bacteria" and could not say what the warnings were related to eating food from there...NM19 #328-336*		▪ *most people are aware of / have heard of the 'issue of wildfoods and contaminants' but with a wide variation of understanding* ▪ *review and updates of messages may be useful: this can pertain to Open Houses, school, newsletters, updates via radio etc.)*
▪ **does the local population have sufficient 'science literacy' to understand the message (at the level it has been communicated)**			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ teachers say: basic health information is being provided in schools, including some relating to nutrition and to pregnancy but " one of the biggest problems is a lot of people don't realize the difference when it comes to nutritional value when it comes to what they are eating" Q4a-b EC3 #189 ▪ health-communication related	▪ Saglek mentioned 3 times as area of concern...one mention was a mention of "bacteria" in wildfood being "pollution"... one FG participant used the word 'pollution' (for contaminants) and then said "bacteria" and could not say what the warnings were related to eating food from there...NM19 #328-336 ▪ *confusion, misunderstanding*	▪ a few documents stood out as trying to communicate the info at understandable level 'Avativut Newsletter' D1, 'Love Your heart: Encouraging Healthy Inuit Hearts' D22, 'traditional Foods Calendar' D29, 'Traditional Labrador Foods' mini-posters D30 ▪ several more stood out as having terms / phrases /	▪ *there was some confusion over nutrition information (e.g. "six units of caffeine is okay during pregnancy")...in this case, one source of information (internet) was trusted with no question. Q10MB2 {696}* ▪ *note: internet information is 'released' with no way to check TG understanding of it.*

KIs say: confusion over nutritional values; cause and effect of diet choices on health, (e.g. diabetes, dental caries) Q4a-b HC7 and HC8 ▪ "nutritional misconceptions" are a problem Q9 HC10 ▪ "I think as health professionals that we sometimes forget that not everyone in the general public has the knowledge we have…to the average person, this is something new to them…to have the background to interpret some of the things that you read on the internet, or in magazines, or hear on TV, to make a good, educated judgement about…beacsue they don't have the background information to do that" HC 12 # 750-763	*prevalent (many references to nutrition information found on the internet)* ▪ *although Northcoast schools have equal to or higher than average graduation rates (90% vs. 88%) they have much lower retention rates (20% vs. 74%), meaning that most seniors graduate but only 1/5 get as far as that…(source: NL Gov't site on education 2004 stats)* ▪ *about 6.2% Inuit graduate from HS…so exposure to HS science is minimal*	concepts that could be unfamiliar, would not be easily understood e.g. 'Breast Compression' D4, D5, D13, 'healthy Eating: A New Life' D20, D24, D27, 'Why Is Nutrtion SO Important Anyway?' D31 ▪ D25 'Saglek and Your Health' was perhaps an exception, being produced locally with local understanding in mind ▪ *some documents are clearly written and distributed with the assumption that there is a basic science/nutrition/health literacy (e.g. breast-feeding materials)…* ▪ *there is no evidence of trying to determine baseline education or understanding on this before creating or distributing already existing messages*	▪ *several documents made suggestions or used imagery of foods that were not relevant to local context…and this could cause confusion over how to make healthy dietary choices (e.g. Canada food guide uses fruits and vegetables not seen in Northcoast communities)* ▪ *some concerns over "nutritiousness" of store food and wildfood substitutes e.g. frozen pizza/tinned tuna does not equal caribou or char in nutrition and has additional health risk/balance issues)…nutritional value of store food is even less clear than the wildfood to many participants in the study*
▪ does the local population have the economic ability to act upon recommendations if necessary (e.g. to buy nutritious foods to supplement or replace wildfood sources)			
Interviews	Focus Groups	Documents	Participant Observation notes
▪ no…cost of store bought food prohibitive, condition of food is poor (add specific quotes	▪ store food is costly, not appetizing (even "rotten") 10 FG participants specifically	▪ there was no mention in the documents of prohibitive costs or even the current cost and	▪ *if people choose to make substitutions based on their understanding of risk, the*

here) ▪ "high cost of staple (food)" Q4a-b HC16 ▪ *in addition, access to and cost of wildfood is an issue of concern for many families (need vehicle/boat, bullets, gas, gun, time off to hunt)...(mentioned by a few KIs)*	mentioned this ▪ *no, most do not, and much of the recommended food (in food guides and CPNP, etc.) is not available locally (e.g. broccoli, skinless chicken, etc).*	limits to access to wildfoods...experienced by many families... (see KI)	*price and availability of food in the stores is prohibitive* ▪ *some concerns over "nutritiousness" of store food and wildfood substitutes e.g. frozen pizza/tinned tuna does not equal caribou or char in nutrition and has additional health risk/balance issues)...nutritional value of store food is even less clear than the wildfood to many participants in the study* ▪ *food security is a huge issue...*

APPENDIX G: SCHOOL ATTENDANCE AND HIGHEST LEVEL OF SCHOOLING IN NAIN, LABRADOR

School Attendance for the Aboriginal Identity Population

		Total	Male	Female	
Total population 15 and over attending school full time		110	55	55	
Age 15-24 attending full time	90	45	45		
Age 25 and over attending full time		20	10	15	
Total population 15 and over attending school part time		0	10	0	
Age 15-24 attending part time		0	0	0	
Age 25 and over attending part time		10	0	0	

Highest Level of Schooling for the Aboriginal Identity Population 25 Years and Over

	Total	Male	Female	
Total population 25 years and over	475	255	225	
Persons with:				
less than high school graduation certificate	225	130	95	
a high school graduation certificate	30	15	10	
some postsecondary education	75	35	45	
a trades, college or university certificate or diploma (below bachelor's degree)	135	70	65	
a university degree at bachelor's level or higher	10	0	10	
% of the population 25 years of age and over with:				
less than a high school graduation certificate	47.4	51.0	42.2	
a high school graduation certificate	6.3		5.9	4.4
some postsecondary education	15.8	13.7	20.0	
a trades, college or university certificate or diploma (below bachelor's degree)	28.4	27.5	28.9	
a university degree at bachelor's level or higher	2.1		0.0	4.4

Source: Statistics Canada. 2002. *2001 census aboriginal population profiles* (Statistics Canada Catalogue no. 93F0043XIE). http://www12.statcan.ca/english/Profil01/AP01/Index.cfm?Lang=E. (accessed 29 July 2009).

Note: "The graduation rate is [the] percentage of students in a particular group who successfully complete the requirements for graduation. The number of graduates for a given age group is compared to the total population for that same age group. The graduation rate is calculated by taking the sum of age-specific ratios ([number of graduates aged 15 divided by the population aged 15] + [number of graduates aged 16 divided by the population aged 16] + [number of graduates aged 19 to 24 divided by the population aged 19])" (Newfoundland & Labrador Department of Education, 2004-5). There was some discrepancy in the numbers / percentages reported but the sample size is very small and there may be some aggregation of data to protect individuals identifiable by the statistics.