

**Perceptions of Health and Environmental Contamination on the
Aamjiwnaang First Nation Reserve**

by

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Abstract

This research study explores how pollution from surrounding petro-chemical industry affects how aboriginal people on the Aamjiwnaang First Nation reserve construct their understandings of the land, the environment, and themselves as people. The residents are aware of the pollution around them, especially since tests of soil and water demonstrate high levels of toxic by-products of the industry. Traditionally, the self, land and spirituality formed coherent constructions of understanding the aboriginal self. Aboriginal people have a strong connection to their land and the environment as it forms part of their spirituality as well as relied upon for their modes of sustenance. This study is guided by Arthur Kleinman's ecological model that looks at perceptions of health from a cross-cultural perspective, within the context of the professional, popular and folk domains. A qualitative research design was used to explore how the Aamjiwnaang people understand environmental contaminants, and how they balance these threats to the land with their identity, spirituality and culture. Eighteen interviews were conducted with residents of the Aamjiwnaang First Nation ranging in age from 41 to 59.

This research provides insight into the identity construction of aboriginal people, and how the Aamjiwnaang people in particular are finding ways to maintain their culture and sense of self when their land is plagued with toxicity. This research found that the Aamjiwnaang people understand health and environmental contamination from within the popular and folk domains, relying on their ties to their community, family and obligations, as well as their indigenous knowledge sources and value systems. Their everyday stories about their changing lifestyle and foods/consumption patterns illuminated how the health and well-being of their people have been deeply affected by ground and airborne contamination, forcing them to fight back against the destruction to their environment.

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Chapter 1

Introduction

Over 150 million kilograms of toxic chemicals are released by manufacturing facilities into Canada's environment each year (PollutionWatch.org).

In a modern world, we are dependent on technology. Technology brings considerable benefits to health; enabling us to devise and mass produce prescription drugs, test and purify our waters, and monitor the quality of air we breathe. While technology brings benefits, it also creates many uncertainties that the population is often ill prepared for.

Modernity and our dependence on technology have moved us towards a highly industrialized state at the expense of the natural environment, to the point where we are now facing an ecological crisis (Edelstein, 2004; Lash et al, 1996; Woodhouse, 2000). The environment provides the natural resources needed to sustain human life and particular ways of life. However, these ways of life are threatened by development projects that create pipelines, power plants and factories. In effect, the use of modern technology is altering our environment, and as a consequence, our health and the patterns of life we follow. This is especially true of the patterns of life of aboriginal people, who have attempted to maintain a close relationship with the environment; a relationship with the natural world that is different from that which dominates Canada.

It is argued that aboriginal peoples have been here since 'time immemorial', being the first Canadians. However, when the Europeans colonized aboriginal Nations, their health and way of life drastically transformed. According to T.K. Young, aboriginal people were virtually disease-free prior to European contact. They possessed extraordinary health and physical fitness before contact with the Europeans (cited in Waldram, 1995). As the Europeans colonized aboriginal lands, they brought with them diseases to which aboriginals

were vulnerable and lacked a natural resistance. Tuberculosis, smallpox, measles, influenza were some of the infectious diseases brought with the Europeans that took an unforeseen and terrifying toll on aboriginal people (Adelson, 2005; Mercer, 2001; Waldram, 1995).

Europeans also encroached on the traditional aboriginal lifestyle, displacing their culture through assimilation and disintegration. Christianization was the main tool of assimilation together with education in Euro-Canadian schools (Danziger Jr., 2004; Driedger, 2003; Waldram 1995). Treaties that forced aboriginal people off their land and onto reserves where they were disciplined by educational, economic and social programs delivered by the Christian church and missionary societies further disintegrated their way of life (Royal Commission on Aboriginal Peoples (RCAP), 1997). Aboriginals lost their voice, their land, and control over their own affairs. They became a displaced culture and population. Relocating communities severed aboriginal people's relationship to and interdependence with the land and environment, weakening their cultural bonds. It also created a loss of economic self-sufficiency, and resulted in a decline in standards of health (RCAP, 1997).

The disruption to aboriginal ways of life has not ended. The reserve now provides security, physical and spiritual refuge, and historical roots for many of today's aboriginal people (McNab, 2004). But today, aboriginal peoples continue to face challenges to their culture, land, and their life on the reserve. Reserve life is affected by ongoing technological and industrial intrusions, and a consequent displacement of traditional cultural ways. Because aboriginal culture is predicated on a connection to the natural environment, in some regions, industrial disturbances have disrupted that connection.

Living off the land and consuming wild game is part of aboriginal peoples' traditions, culture and lifestyle (Johnston, 1976); therefore, where there is destruction to

their natural environment, this is detrimental to the livelihood of their population.

Traditional food not only provides sustenance, it also is a constituent part of the concept of health in aboriginal communities, and contributes to their spiritual and cultural identity (Van Oostdam et al., 1999). Aboriginal peoples define themselves in relation to their food, culture and appreciation for the land. In essence, harmonizing with their 'place' is integral to the spiritual, psychological, and cultural survival of aboriginal people (Cajete, 1994; McNab, 2004).

This research focuses on how the people of the Aamjiwnaang First Nation, whose reserve is surrounded by petrochemical plants that are contaminating reserve water, land and air with industrial pollutants, respond to knowledge of this pollution. The study also examines how this knowledge is used in reconstructing their understandings of the land, the environment and themselves as peoples.

The Aamjiwnaang First Nation is located in Sarnia along the St. Clair River in Sarnia, Ontario. Sarnia is often referred to as a 'community' or 'area' of concern because it houses one of Canada's largest complexes of petrochemical industries. These petrochemical industries create risks to human health as they emit toxic substances such as benzene and mercury into the air. It has been estimated that in Sarnia alone 400 tons of mercury has been released in a 25-year period (Gilbertson, 2004).

Benzene is of particular concern in the Sarnia area because it is manufactured in high quantities, and is mainly used in the manufacture of other organic chemicals (Health Canada, October 1987). With high level exposure to benzene, some of the reported health effects include skin irritations, dizziness, headaches, and cardiac arrhythmia. With low level exposure possible effects include cancers, and chronic respiratory problems (Landrigan, 1996). Aside from the acute health effects related to benzene and other toxic substances,

Environment Canada has also researched and found that there are hormonal disruptions in the St. Clair River that runs near the Aamjiwnaang reserve, and animal deformities and reproductive problems of the animals in the St. Clair area (Environment Canada, 2005). This provides evidence of the possible effects of contamination and the reason why Environment Canada has issued health advisories restricting fish consumption in the St. Clair River region.

Residents of the Aamjiwnaang Nation have seen the signs of contamination and recognize that their community is affected by pollution and contamination. The community is concerned about ongoing toxic releases, and dumping of toxic substances in and around their reserve. They have subsequently taken steps to address these pollution and contamination problems in their community by commissioning environmental and health studies with local researchers. These studies have included an environmental assessment (Leadley & Haffner, 1996), body mappings (Occupational Health Clinics for Ontario Workers (OHCOW) and the Aamjiwnaang Environment Committee (AEC), 2005), a study on newborns ratio (Mackenzie et al., 2005), a food survey (Wren & Associates, 2005), and sediment sampling (Atkinson Davies Inc., 2005).

One study of particular interest, commissioned by the Aamjiwnaang First Nation, examined chemical contaminants found in the air, sediment and soil on the Aamjiwnaang reserve (Leadley & Haffner, 1996). Among the contaminants found were pesticides, organochlorine hydrocarbons, polychlorinated biphenyls and heavy metals. The report concluded that these toxins are present in the community, and further investigation into the effects is warranted (Leadley & Haffner, 1996). The health and body mapping study by Occupational Health Clinics for Ontario Workers (OCHOW) and the Aamjiwnaang First Nation have some preliminary findings, still in draft form, concerning health issues in the

Aamjiwnaang community (OCHOW & AEC, 2005). They found that there is a larger percentage of respiratory problems amongst children on the Aamjiwnaang reserve (asthma in 22% of children 12 and over in comparison to 8.2% who are 12 and over in Lambton County). It was also found that 39% of women over the age of 18 have had at least one miscarriage or stillbirth, in comparison to an estimated 25% of women over the age of 18 in the general Canadian population (OCHOW & AEC, 2005). Overall, these studies have reported that on the Aamjiwnaang reserve, miscarriages may be elevated, asthma in children is of greater risk, birth ratios are skewed, and rashes on children predominant. While these research studies begin to unveil the tenacious health crisis facing this First Nation community, the Aamjiwnaang community has stepped to cope and deal with these harsh realities.

Ongoing chemical spills and releases by surrounding industrial plants have meant that the Aamjiwnaang First Nation must find ways to manage the risks involved with potential spills. This has compelled this First Nation to work as a community to devise plans of evacuation in the most serious, acute cases of toxic threat. Evacuations of the Aamjiwnaang reserve follow the guidelines set by the City of Sarnia's evacuation protocol and Community Awareness Emergency Response (CAER). CAER is a professional organization that addresses the issues arising from a community living in close proximity to large chemical manufacturing, industrial, and oil refining industries. They have devised an Emergency Evacuation protocol when a designated area has been impacted by an emergency due to chemical release of some sort (CAER, 2005). The Aamjiwnaang people are part of the emergency evacuation protocol.

This research uses Arthur Kleinman's ecological model to look at how people of the Aamjiwnaang recognize and respond to these environmental threats. Kleinman's model

focuses on the subject location of Aamjiwnaang people in relation to their culture, history and geography. Kleinman's model helps us to understand how the Aamjiwnaang people interpret and make use of information and knowledge from professionals, those close to them, and their traditions in determining their understandings of health, pollution and risk. In this model we see how Aamjiwnaang residents use professional, scientific information about pollution and health, with their traditional or folk understandings of the relationship between environment, health, spirit, culture and identity. These understandings are further guided and combined, as Kleinman suggests, with understandings and experiences they have had as families and as a community. In constructing these understandings, the Aamjiwnaang residents are influenced and affected by different external forces such as social, historical and technological pressures, and internal powers such as feelings of susceptibility and vulnerability.

The objective of this research is to:

Use Arthur Kleinman's model to explain how the subject location (e.g. culture, history, geography) of a reserve-living aboriginal population influences their understandings, interpretations and use of knowledge about health and perceived risks of environmental contamination.

Chapter 2

Literature Review

An ecological crisis continues to unfold. The media, popular literature, academic research, healthcare advisories and international accords all address this issue of environmental degradation related to modern development, which is plaguing our nations and threatening the human population and natural environment (Suzuki, 2005; United Nations Environment Programme (UNEP), 1995; Woodhouse, 2000).

However, there are differential effects associated with this rising environmental crisis. Researchers have asked why there are particular groups within the population that are disproportionately suffering from exposure to environmental contaminants (Allen, 1995; Bullard, 1996; Denq, 2000; Graham et al., 1999; Maher, 1998; Westra, 1998; Zimmerman, 1993). Is it a matter of where one works, where one lives, or a combination of the two? People who work in industrial plants, live near industrial plants, or live where the flow of water, winds and animals carry pollutants to them, are more vulnerable to exposure to pollutants. The Canada-United States Great Lakes Water Quality Agreement has identified 43 Great Lakes Areas of Concern, 15 of which are Canadian. An Area of Concern is identified when environmental quality is considerably degraded and the beneficial use for both humans and wildlife is impaired (Ontario Ministry of Environment, 2004). Individuals who live in these Areas of Concern may be burdened with increased exposure to environmental risks that are detrimental to their health.

Being vulnerable to environmental contaminants is not only based on the intrinsic nature of the hazard, but also the geographic and socioeconomic location of people exposed to it (Committee on Environmental Justice, 1999; Van Oostdam et al., 1999). People who

live in close proximity to industrial plants are more at risk of exposure to contaminants, but researchers have asked why there are common characteristics amongst groups of people who are located in or near Areas of Concern, or living near to industrial plants (Allen, 1995; Bullard, 1996; Denq, 2000; Maher, 1998;). Studies in the United States have shown that Blacks, Hispanics and the working poor are disproportionately located in close proximity to industrial plants (Bullard, 1996; Committee on Environmental Justice, 1999; Denq, 2000; Maher, 1998; Allen, 1995). This has led to the development of theories of environmental racism and classism. Central to debates surrounding these theories are whether industrial plants are deliberately built near visible minority populations, and low-income families, or whether these populations are over-represented in these at-risk areas due to the low cost of the land e.g. they move in after the industrial plants are built. The fact remains, however, that people are differentially affected by industrial pollution.

Although the theory of environmental racism/classism was developed in the context of the United States, Health Canada reports that it is clear that several groups of aboriginal peoples in Canada are at risk of exposure to environmental contaminants, especially through their food consumption (Health Canada, 1999), which ultimately affects their health.

Aboriginal Peoples and the Effects from the Environment

Among reserve-living aboriginal people, there is interdependence among the environment, their economy and human health. When the environment is in jeopardy, their health is also in jeopardy. According to Wheatley (1994), aboriginal people benefit little from economic development, but do suffer from the environmental pollution produced by development. Modern industry and technology has introduced an array of toxins and waste by-products that make their way into the air, waterways, and the food chain. This most

directly affects populations that are dependent on the natural environment for water and food, among them are Canada's aboriginal populations.

In November 1999, Health Canada's First Nation and Inuit Health Branch reported that in Broughton Island, Nunavut, over 60% of Inuit children under the age of 15 and approximately 40% of Inuit women of childbearing age had polychlorinated biphenyl (PCB) body burdens exceeding Health Canada's 'tolerable' guidelines (Health Canada, 1999; Ship, 2005). These results parallel Dewailly et al.'s earlier findings that the mean PCB concentration in the milk fat of Inuit women is greater than reported for the general female population of various countries, including Canada and the United States. This makes fetuses and breast-fed babies among the most heavily exposed and susceptible groups of the Inu (Dewailly et al., 1993). Concentrations of PCBs in newborn Quebec Inuit and Montagnais of the St. Lawrence River have been reported to be four times higher than the concentrations in Southern Quebec infants (Health Canada, 1999). Increased levels of polychlorinated biphenyls (PCB's), organochlorines, and mercury pose extensive health risks such as problems with the liver, reproduction, infant birth weights, the immune system, neuro-developmental effects, and higher incidences of infectious diseases especially in a developing fetus and newborn infants (Dewailly et al., 1993; Health Canada, 1999, Van Oostdam et al., 1999).

While these organochlorine compounds are dumped primarily in the United States and Southern Canada, their effects and environmental concentrations are highest in the Arctic. Organochlorines are compounds that include pesticides, industrial compounds, and byproducts of various industrial processes e.g. hexachlorobenzene (HCB) and polychlorinated biphenyls (PCBs) (Dewailly et al., 1993). Even with regulatory attempts to prevent the emission of these compounds into the environment, the compounds continue to

escape into the air due to improper storage and disposal, accidents, and on-going use in other parts of the world (Dewailly et al., 1993; Van Oostdam, 1999). These emissions are made at middle and lower altitudes with organochlorines reaching the Arctic via long-range atmospheric transport, waterways and the ocean currents (Dewailly, et al., 1993). High lipophilicity and a resistance to biodegradation allow organochlorines to bioconcentrate in the fatty tissues of organisms. Since fish, land and marine animals are often from higher trophic levels of the food chain, they provide an opportunity for bioaccumulation and biomagnification of contaminants (Flint & Vena, 1991; Ship, 2005; Van Oostdam et al., 1999). In this sense, wild meat poses more risks to health than domestic livestock for the primary reason those domestic meats, e.g. meats that are from animals bred on a farm and have a controlled diet comprised primarily of commercially produced feed, unlike wild animals whose diet is uncontrolled, unmonitored and comprised of 'wild' vegetation and meat. The documentation of high levels of environmental contaminants in fish and wild animals has led Health Canada to issue advisories recommending a limitation of consumption of wild meat and fish (Health Canada, 2001). Aboriginal peoples living in the North, are particularly susceptible to increased PCB body burdens in comparison because of their dependence on these wild meats and fish, which are at the end of the bio-accumulation chain of environmental pollutants.

Some southern Canadian populations are also at risk. In a recent study conducted by Mackenzie et al. (2005) on the Aamjiwnaang First Nation in Southwestern Ontario, it was found that there is an altered sex ratio among newborns, a potential result of contamination with endocrine disrupting compounds (EDC). While the ratio of male to female births between 1984 and 1992 was stable, there was a significant decline in the proportion of males between 1993 and 2003 (Mackenzie et al., 2005). EDC exposure has been proposed as a

potential cause. Vulnerability to EDCs is found when populations live in close proximity to chemical plants or are exposed through their major food sources. While a disrupted sex ratio is not an immediate health hazard, it is an indicator of environmental contaminants affecting a population and it does have an effect on the community's reproductive ability (Mackenzie et al., 2005).

Responses to Environmental Contaminants

Research conducted under the auspices of Health Canada demonstrates that knowledge of the potential threat of contamination has led many aboriginal people to change their food consumption habits. A study on the Akwesasne reserve on the St. Lawrence River showed that even when PCB levels in women's breast milk were low, people in the community altered their consumption patterns because they had been hearing about the effects of PCB for fifteen years. But new consumption patterns also present threats to aboriginal health (Health Canada, 1999; Wheatley, 1993). When the residents of Akwesasne reduced their intake of high protein fish because of concerns about PCBs, they increased consumption of carbohydrate-rich commercially produced food which led to an increase in the prevalence of diabetes to four times the Canadian average (Joe, 2000; Wheatley, 1993). Several genetic predispositions have been identified in Canadian aboriginal populations that combine with commercially produced foods. For example, a genetic predisposition to fat storage served aboriginal people well when they had a physically active lifestyle of hunting, seasonal migrations, and/or survival through cold Canadian winters. Today this predisposition combines with the less active lifestyle found on the reserve and a high-fat and carbohydrate-rich diet to contribute to elevated levels of diabetes in the Ojibway and Cree communities (Health Canada, 1999). Changing from a

traditional diet to commercial foods has also been found to make aboriginal peoples more susceptible to heart disease, high blood pressure, cancers, and dental disease (Kuhnlein, 1995; Wheatley, 1993). Reserve life and a commercial diet have also been associated with fetal alcohol syndrome, mental health problems, and poor cultural morale (Health Canada, 1999; Kuhnlein, 1995; Wheatley, 1993).

Responses to Change are Culturally Grounded

Besides the effects on health, there is a concern for the loss of traditional knowledge and culture since traditional food systems provide the means of cultural expression and opportunities for environmental awareness and enjoyment, as well as for physical fitness (Kuhnlein, 1995)

Hobson asserts, "traditional knowledge is the accumulated knowledge and understanding of the place of human beings in relation to the world in both an ecological and spiritual sense" (Hobson, 1992). Despite historical attempts during colonial times to destroy their culture, many aboriginal peoples continue to pursue and maintain their distinct tradition-based lifestyle and belief system. Traditional knowledge forms the worldviews, organizing principles of life, and laws of behaviour for aboriginal people (Simpson, 2000). But this is often difficult in the face of external influences such as restriction to reserves that are inadequate to provide for survival, and environmental degradation of the reserve lands on which they live (RCAP, 1997). Historically, survival of aboriginal peoples has depended on their knowledge, their essential relationship with the environment, and their ways of organizing themselves and their values (Hobson, 1992).

Tradition continues to set the pattern of life for many aboriginal people, particularly those who live on reserves or are isolated, in other ways, from the urbanized Canadian environment. The land on which they live not only contributes to their sustenance, but is

also a part of their heritage and identity. Hunting, gathering (collecting food such as roots, seeds, fish and berries), and cultivating food plants continue to hold a significant place in their lives. There are implications that expand beyond dietary changes once these are jeopardized because of contamination. Wheatley (1994) reports that fishing commercially and for survival, for example, is part of the daily lifestyle for many aboriginal peoples. When high mercury levels are identified in fish, both the food source and economic base of the community are jeopardized. In addition, the traditional aboriginal knowledge and lifestyle associated with fishing are not passed on to children, and a culture is lost.

Aboriginal peoples believe that subsistence is directly related to the force of nature (Friesen, 1997), and that the land is one of the most important sources of their self-identification (McNab, 2004; Notzke, 1994). To speak of the land as a self-identifier for aboriginal peoples is to know that it is not simply “the ground that supports their feet but also includes the waters, plants, animals, fish, birds air, seasons – all the beings, elements and processes encompassed by the term biosphere” (RCAP, 1997, pg. 631). For aboriginal peoples, their life is maintained through a balance with the land, the water and all other living species (Johnston, 1976). A harmony is thus formed where there is a mutual respect of life based on a belief that each thing has a spirit and soul, with a right to life. Friesen says of the original inhabitants of Canada, “they were inventive cultures, but totally committed to working in harmony with the dictates of nature” (Friesen, 1997, pg. 23). In their belief system, there is the idea that in the circle of life everything is there for you. Your food is there through the animals, fish, birds, trees, rocks and water (RCAP, 1997); therefore it is essential to safeguard the earth, appreciating the gift of life and nature’s resources. For aboriginal people, the forces of nature are a gift from the Creator and are to be received with gratitude (Friesen, 1997).

This concept of the land is often emphasized by aboriginal leaders. For example Chief Edmund Metatawabin of Fort Albany on James Bay is cited in the RCAP report as saying:

Mushkegowuk of James Bay ancestry dating back 10,000 years hold a belief that the Creator put them on this land, this garden, to oversee and take care of it for those that are not yet born. The law of maintenance or just maintaining that garden means taking care of the physical environment. It also means maintaining a harmonious relationship with other people and the animals depended on for survival.

Cited in RCAP, 1996: 632
Chief Edmund Metatawabin
Fort Albany First Nation Community
Timmins, ON, 5 November 1992

Throughout the history of European colonization and conquest, the fundamental goal was to gain control of as much land in order to service a particular lifestyle based on economic growth, wealth and accumulation (e.g. the fur trade, lumber, minerals). Cajete (1994) suggests that the Western culture is disconnected from spiritual ecology and a deeply internalized sense of place. With an objectified orientation towards the natural world, it was easy to control and exploit the natural land for economic gain, profit, command and control. Nature is only used as a platform for material gain, so it did not matter if the consequence was the annihilation of species, forests, and degraded landscapes.

In contrast to the cultural view of the colonizing Europeans, Smallface Marule (1978), cited in Notzke (1994, pg. 174), points out that “the easiest way to destroy the distinctiveness of Indian people and their cultural heritage is to eliminate the land base”. The land base was already severely jeopardized in colonization and the forced move of aboriginal people to reserves. Today, the land that aboriginal peoples use on their reserves allows them to maintain this strong holistic connection to their natural land base. Clearly, the distress caused to aboriginal peoples by the destruction and contamination of their land by industrialization and new technologies is far greater than merely a distress related to a

need to change diet, and it is a far greater distress than that caused to other Canadians who have neither been dependent on 'traditional foods' nor have such a primal connection to the land. To aboriginal people, the pollution of their reserve lands and contamination of their traditional foods destroys their way of life, jeopardizes their health, and threatens their very being as aboriginal people.

Risk Perception and Response

Risk is evaluated by an individual's response to questions of how risky a given action or decision is. Depending on the relative severity of the consequences, some risks are given more attention. Severity of the consequences is often determined by visibility, and subjective beliefs about how particular incidents or actions might affect them. Besides making assessments based on severity, some people make judgments based on susceptibility. Some believe that they are more susceptible to particular hazards, e.g. those living in close proximity to industrial plants, and thus perceive higher risks to themselves or families. Personal and collective factors (e.g. economic, social, and historical) influence how one understands issues, and the way in which one reacts at the individual level (Northern Contaminants Program, Department of Indian Affairs and Northern Development, (DIAND) 2003)

Persistent Exposure affects the Perception of Risk

Deepened perceptions of risk may be related to unequal prior experiences with particular hazards. Vaughan and Nordenstam (1991) argue that unequal prior experiences with a particular hazard will arouse different response patterns between groups. They further note that risk judgements can be affected by past experiences, especially in communities regularly exposed to environmental risks either at home or at work. These

prior experiences are often mediated by cognitive processes involved in the evaluation of risk e.g. perceived control over exposure, involuntary exposure, perceived personal relevance of a risk, the degree of familiarity with a hazard, uncertainty about probabilities or consequences of exposure, unequally distributed risks and benefits (Northern Contaminants Program (DIAND, 2003); Vaughan and Nordenstam, 1991). Weinstein (1989), as cited in Vaughan and Nordenstam (1991, pg. 43), found that “prior experience with a hazard or frequent exposure could result in lower perceptions of risk for familiar technologies when negative effects of exposure are not apparent or attributed to the source of risk.” By example, familiar technologies such as a curling iron, or household chemicals are generally perceived as less risky because adverse risk are usually less apparent. Correspondingly, Savage (1993) maintains that there is a close relationship between perceived personal exposure and persistent exposure. His study that looked at demographic influences on risk perceptions, and found those women, blacks, the young and those with lower income and education, had heightened personal exposure to risks and were more nervous about them (referred to as the dread factor). However, he qualifies this by asserting that this heightened perceived threat amongst these groups is substantiated by their lived realities. For example, blacks and low-income individuals may experience a disproportionately high number of household fires in their community due to environmental causes or some other hazards (Savage, 1993). This may then lead the individual to perceive greater threats or risks to him or herself due to consistent exposure. Theories on responses to environmental threats have found that persons faced with the possibility of enduring and repeated exposure to chemical pollutants will likely judge the risk as greater especially when they feel their control over health effects are minimal (e.g. Baird, 1986; Brody, 1988; Litai, Lanning & Rasmussen, 1983; Slovic, 1987 cited in Vaughan, 1993)

Perceived Control of Outcomes and the Visibility of Health Consequences

Vaughan (1993a) contends from her study of Mexican farm workers and their adaptation to risk, that three factors are useful in accounting for variability amongst individual perceptions of risk: beliefs about the broader economic context of exposure, perceptions of control over health outcomes, and beliefs about the personal relevance of risk. She finds that decisions to manage a risk also depend on the perceived personal economic consequences. People whose livelihood requires exposure to risk may feel that occupational exposure is involuntary, and in turn will be less active in reducing their exposure to risk. In this case, they may focus more on the economic gains rather than the health consequences of risk (Vaughan, 1993a). Similarly, Cutter (1981) has found that perception of risks associated with air and solid waste pollutants is significantly greater in urban communities, but found that poverty was the primary demographic variable associated with increased perceptions of risk, independent of actual levels of pollution in the given community. This might be connected to lack of perceived control over the situation, a perception and a reality, which is endemic among the poor.

Vaughan (1993) also found that beliefs about level of control over health outcomes play a role in behavioural responses to risk. In her study of immigrant farm workers' response to chronic pesticide exposure, 54% of the sample believed that cancers were mostly the result of unavoidable exposures. A large majority of the sample believed they had little or no control over experiencing negative health effects of pesticides and in turn demonstrated a decreased likelihood of using self-protective methods (Vaughan, 1993). It appears that both the perceived lack of control and the invisibility of effects over a long period of time contributed to the decrease in self-protection.

Informing about Health behaviours

The literature also addresses a dilemma concerning how people use and process information concerning environmentally posed risks to their health. The central dilemma lies within the bounds of appealing to scientific knowledge versus commonsense or traditional knowledge.

A study conducted by Joanna Burger and her colleagues (1999) looked at fishing and consumption patterns in an ethnically diverse sample. This study sought to examine the differences in behaviour, information sources, perceptions and compliance in order to reduce risk by targeting particular groups for information dissemination. Kraus and Slovic (1993), cited in Burger et al. (1999), asserted that diverse perceptions about a single group of hazards may provide important information about risk management decisions. This is particularly relevant for fishing or consumption advisories where knowledge of the warnings and potential dangers are required if personal choices are to be affected. Burger et al.'s (1999) study revealed that in spite of toxic consumption warnings related to certain fish, people continued to eat the fish. Not having consumption warnings prior to the study, the participants were asked about the safety of fish and crabs, possible adverse effects, and their subsequent behaviour if they knew that the fish or crabs posed a health hazard (Burger et al., 1999). Responses revealed that about half the sample (47%) believed it was safe to eat fish more frequently than was advised. However, even when they were later presented with information about cancer risks to themselves and unborn children, there was still a percentage that felt it was safe to eat the fish and crabs.

Closely related, the Santé Quebec survey of Nunavik Inuit by DeWailly et al. (1994) (cited in Van Oostdam, 1999) and cited earlier in this thesis, assessed individual perceptions of environmental contamination with PCBs. The survey revealed that almost two out of

three Nunavik Inuit (62%) had heard of PCB contamination of the food chain, and the majority of participants wanted more information. The results further indicated, however, that only about 14% of participants reported a change in their eating habits when aware of PCB contamination of country food, with only 10.9% reducing their consumption, and 3.5% discontinuing consumption altogether. These results, as with Burger et al.'s study (1999), reveal little change despite knowing about contamination and, in the case of the Inu, despite asking for more information on the subject. The majority of participants in this study did not significantly change their eating habits. A possible explanation for these actions may be related to availability of other foods, e.g. foods that are considered edible and healthy.

Interpreting Risk Information

It is important to understand the reasons why some people opt to stop or reduce their consumption of contaminated foods when presented with food advisories, while others do not. This divergence might be related to how a person understands a certain activity. For example, the media is used to convey warnings and prescriptions about how we should conduct ourselves, and provides us with an abundance of information about our health. The results of studies on smoking and sexual risk have been transmitted to the public through virtually every form of mass communication (radio, television, Internet, billboards etc). Knowledge of research leading to a link between smoking and cancer has led some to abstain from smoking, while others continue to smoke. We have also been told about the dire consequences if one chooses not to practice 'safe sex'; HIV/AIDs being the most serious. Some have taken more safety precautions in their sexual practices, while others continue 'risky' sexual practices. On a societal level, we continue to find ways to mitigate the effects of various health risks, but research also shows that typically some degree of personal action or change is required to diminish risks (Vaughan, 1993).

Research has demonstrated that people often over exaggerate their ability to detect contamination of the foods they eat, as they rely on their senses of taste, smell and vision to warn of harmful or unsafe foods. A study in Wollaston Lake, a Dene community located in Northeastern Saskatchewan that has been affected by uranium mining, found that people were concerned about the presence of mines that could impact on the plants and animals, but were less concerned that people who consumed the plants and animals from the mining region would get sick (O'Neil et al., 1997). The people had a high level of confidence that they could recognize (and thus avoid) diseased or otherwise affected plants and animals (O'Neil et al., 1997). Yet, it is possible that contamination may be odourless, tasteless, and not easily detectable to the human eye. Weinstein (1982, 1989) suggests that people tend to be unrealistically optimistic about their own susceptibility to risk, especially when their activity is voluntary. This sense of invulnerability may occur when no sudden or severe effects are experienced, or when the individual perceives that they have control over the health effects. Let us take the example of fishing. Fishing is a common pastime for many people, done as sport or for subsistence. Because people generally volunteer to engage in this recreation, the perceived risks associated with this activity may not be as high, therefore making it difficult to influence people to change their consumption patterns of fish. The same thinking applies to sexual practices, smoking, diet or other lifestyle issues; they are voluntary, have few immediate negative effects, we feel we are in control, so we resist seeing them as posing a danger.

Assessing Information based on Systems of Belief

An Inuit community located on the Eastern shore of Hudson's Bay in Northern Quebec assessed the environmental impact of Hydro Quebec's Great Whale Hydroelectric project. Participants were asked whether they agreed or disagreed with the statement:

“animals near the dam would move away from it or get sick as a result of being close to the dam”. It was observed that the people in this community believed that animals always move in response to people therefore they expected them to avoid the high activity areas around the dams. They further believed that those animals that did not move would be exposed to sickness, and that since fish have less overall mobility than land animals, they would also have their spawning disrupted (O’Neil et al., 1997). Interestingly, this study found that despite the belief that fish would be more affected there was a tendency to believe that fish consumption was not likely to be a source of sickness. This was also despite all the scientific information distributed within the community on mercury contamination in fish (O’Neil et al., 1997). The researchers attributed this to two possibilities: the first being that continuing to consume country food may be a form of resistance to development in the region - a way to maintain traditional lifestyles. Second, the information provided to the community concerning fish contamination was highly scientific and at odds with local ways of understanding risk. The scientific evidence was based on predictions, risk or odds ratios and did not present a clear picture of the relationship between mercury, fish and people. In Van Oostdam et al.’s studies, they reported that almost all reviewed cases relating to environmental contaminants in aboriginal communities gave rise to local uncertainty and anxiety due to the absence of straightforward and credible information on toxicity (Van Oostdam et al., 1999). Although Western science works based on odds and probabilities and considers increases in the odds of a negative outcome to be sufficient reason to be alarmed, such a presentation does not offer the clarity and certainty of explanation required at the local level. Local ways of knowing might allow for a better understanding of how different groups perceive environmental contaminants.

Scientific vs. Traditional Knowledge Sources

Western intellectual tradition often denies indigenous traditional knowledge foundations on the grounds that they lack a scientific base, appealing instead to ideas of folklore and/or spirituality. The Western perspective rejects traditional knowledge, arguing that it is anecdotal, non-quantitative, and without method (Hobson, 1992). Science is about reliability, replicability and predictability and is considered a more accurate and precise way of knowing. The scientific approach to understanding and interpreting the world is considered the rational way, containing factual information about health, environment and risk. Because the western world believes they have the rational voice, they feel justified in forcing aboriginal peoples to abandon their traditional knowledge base, and accept scientific fact to protect their health.

Only recently has traditional environmental knowledge (TEK) been recognized within the western scientific community for its value to contemporary environmental management. Traditional knowledge is not just about what aboriginal peoples know about the land and animals, it is also a value system and an understanding of what life is about (Simpson, 2000). As described in a report from the Department of Culture and Communications, Government of the Northwest Territories (1991), it is the "condition of knowing something with familiarity gained through association and experience...and offers a view of the world, aspirations and an avenue to 'truth', different from those held by non-aboriginal people" (cited in Bielawski, 1992, pg. 6). When there is a solid linkage between local knowledge bases and western scientific thought, effective risk management techniques can be recommended to help remedy the overexposure of aboriginal peoples to health risks.

This review of literature suggests that people follow different processes in dealing with environmental contamination. There are various individual response patterns that

individuals undergo when living or working in and around a contaminated community that include assessing the severity of the consequences of a particular behaviour to a perceived personal susceptibility of a given problem. The literature also demonstrates that people draw on varying influences and factors, such as history, economics and culture, in understanding health and responding to contamination. The literature has also contributed to an understanding of aboriginal people's understanding of the environment, and how it defines their culture and identity. Aboriginal people assess their orientations towards, and understandings of health and the environment based on their relationship with environment, and also draw on spiritual, cultural, and traditional knowledge in making decisions.

Chapter 3

Theoretical Framework

This thesis is set within the theoretical framework of Arthur Kleinman's ecological model. Arthur M. Kleinman is a professor of Medical Anthropology and Psychiatry at Harvard Medical School, and also a professor of Social Anthropology at Harvard University. Much of his research in the areas of mental health, ethnicity and health, chronic illness and social suffering is informed by cross-cultural studies.

Kleinman has developed a theoretical model that addresses health, healing, and illness from a multi-cultural ecological perspective (Kleinman, 1978). Because health is understood differently from culture to culture, he examines different cultural orientations towards health understandings and behaviours. Health is set within an ecological frame, where "external" (social, political, economic, historical, epidemiological and technological) factors influence "internal" (psychophysiological, behavioural, and communicative) processes, setting individual health behaviours within the contexts of both socio-political structures and local (physical and cultural) settings. The individual is the subject or focal point, drawing simultaneously and differentially from professional, local network (popular), and traditional (folk) domains of knowledge in developing personal meaning and decision making (See Figure 1, end of chapter).

Kleinman directs us to understand individual meaning-making and choice as influenced by three arenas or domains, the professional, popular and folk. Scientific research and descriptions of risk probabilities reside in the professional domains. This domain consists of researchers, scientists, health educators, and governing bodies. The popular sector comprises of family, friends, neighbours and community organizations. This

is the place where we live our daily lives. Kleinman suggests that most decisions regarding when to seek aid in the professional arena, who to trust, consult, or whether to comply, are made in the popular domain (Kleinman, 1978). The folk arena consists of non-professionals', religious, indigenous, traditional healers or elders. Here is where traditional approaches, understandings and ways of thinking about environment, health etc. reside. Each of these domains represents a different culture, language, and potentially a different way of thinking, understanding and interpreting lived experience. These overlapping arenas are appealed to and accessed depending on how particular events, situations or problems affect and are interpreted by the individual and his or her community (Adrien et al., 1996).

My research looks at examining how the subject, located in a particular historical, physical, economic, and social place understands and responds to environmental hazards. This model leads me to listen for the voices of each of the three domains, how they intersect and how they influence the interpretation and understanding of environmental hazards, and also the actions taken and suggested.

According to Kleinman, the subject finds personal explanatory model(s) (EMs) to guide his or her behaviour. Each of the professional, popular and folk domains is linked to systems of knowledge and values. The form that each takes, the amount of overlap between domains and the salience of each in individual meaning and decision making is a result of historical and socio-political processes (Kleinman, 1978). Let us take for example the case of environmental contaminants making the consumption of wild meat a hazard to health. In the professional EM, the risk to health is assessed based on scientific research and expressed as the odds of various negative health outcomes. A rational response to this information is to stop consuming the wild meat, as is proposed in food and health advisories from Health and Environment Canada. In the popular domain, risks are assessed in relation to the family and

community. For instance, people may weigh risks in relation to the potential effects they may have on their children or future generations, others may make assessments in relation to members in the community such as elders and neighbours. Further to this, some may evaluate risks based on their prior experiences, e.g. personally knowing someone who was affected by environmental contamination. Response to this problem may be to reduce consumption if family and friends have or could be affected, or to maintain consumption if it is an essential part of family activities such as hunting, fishing and trapping as was suggested by O'Neil et al. (1997). In the folk arena, people may make assessments based on their traditional understandings and knowledge base. This is where Bielawski's discussion on traditional environmental knowledge (TEK) is understood. Story-telling passed down through generations about the importance of one's culture, environment and identity is one form of this. Response to this problem in this arena may be to continue consuming wild meat because it is a self-defining process, and maintains the connection to land and culture.

With the explanatory models, we can begin to see how there might be conflict in communicating how a situation is perceived in the professional, popular and folk arenas of one's subject location (Kleinman, 1978). One might now understand how concepts such as health and the environment are construed in the professional EM as simply relating to and affecting the biological 'body', whereas the popular EM perceives it as relating to the larger effects it may have on family and community. Relatedly, health and environment in the folk domain are concerned with tradition, lifestyle, continuation of a people, their way of life and identity. In effect, there are different ways of explaining one's understandings of health, orientation towards the environment, and the effects of environmental contaminants when they are grounded within different social constructions of reality.

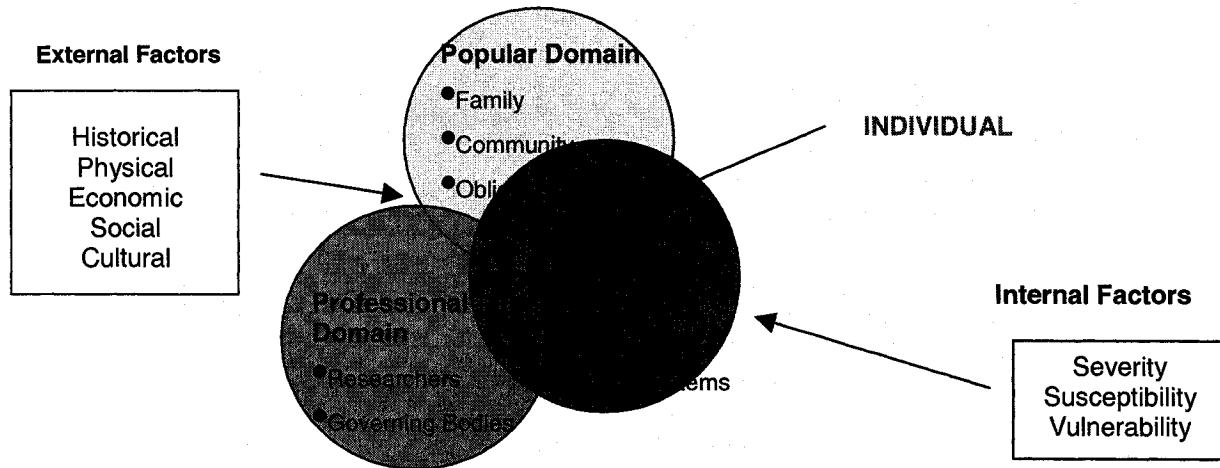
The culture of professional practitioners - scientists, researchers and government officials – provides technical explanations and remedies based on scientific research. But people often seek, in addition to the technical information, socially meaningful explanations that they can understand within their subjective experiences, and languages of experience (Kleinman, 1978). This is why the folk domain, nowadays understood as indigenous knowledge, or culture of the everyday, has not disappeared in educating people about social issues and problems of the modern day, and helping them to make choices. An understanding of the indigenous culture of health and environment might contribute to the implementation of health awareness, advisories, and risk-reduction strategies that are culturally specific in indigenous communities.

The relative credibility and influence of each of the three domains (professional, popular and folk) is influenced by history, economics, and social systems. For example, the history between aboriginal peoples and the government determines the level of trust aboriginal people have for professionals, e.g. the government (Driedger, 2003; RCAP, 1997; Waldram, 1995). Aboriginal peoples have been taken advantage of concerning their land and culture to the detriment of their communities, and health. These historical processes will fundamentally weight the judgments and levels of trust aboriginal people have of professionals, and thus the potentiality of drawing on the professional domain for guidance and assistance. Each domain is also influenced by economics as was mentioned by Vaughan (1991), that is, in providing for the family, how will one's livelihood be sustained or affected? In addition, social systems guide decisions relating to choosing among alternative behaviours or lifestyles e.g. eating wild meat versus commercial foods, mentioned in Wheatley (1994). Internal factors also influence each domain. Personal assessments about risk relating to severity, susceptibility, and visibility influence which domains will be drawn

upon in making choices and decisions about health, and understandings of environmental contamination in conjunction with external factors. As mentioned in Baird, 1986; Brody, 1988; Litai, Lanning & Rasmussen, 1983; Savage 1992; Slovic, 1987; Vaughan and Nordenstam 1991 cited in Vaughan, 1993, personal beliefs and subjective factors not directly related to the particular exposure have been shown to have an effect on individual risk assessment. Perceptions of exposure, persistence of exposure, control of the outcomes and visibility or invisibility of the health consequences, in a reasonably close time to exposure, all influence the likelihood of action being taken when responding to environmental pollution.

Given the increasing presence of environmental contamination affecting Canadian communities, this research is about understanding how the Aamjiwnaang First Nation deals with the presence of environmental contamination and health risks, when living in a 'place' that has deep historical, physical, and cultural ties. My research explains from the perspective of the Aamjiwnaang people, how a series of historical, social, geographical and cultural processes affect the way Aamjiwnaang people perceive risks of environmental contamination from industrial plants, and how they call on the professional, popular and folk domains in their perceptions, assessments and responses to these risks.

Figure 1.1 Arthur Kleinman's Ecological Model
How does an individual understand and interpret things?



Chapter 4

Methodology

This research into aboriginal understandings and responses to environmental contamination of reserve land was conducted in an aboriginal community called the Chippewas of Sarnia Aamjiwnaang First Nation, located in Sarnia Ontario. The Chippewas of Aamjiwnaang have approximately 850 band members residing on the reserve (Department of Indian Affairs and Northern Development, 2001).

The research is part of a larger study investigating the relationship between experiences of physical and emotional health, and perceptions of health risks posed by the environment and the environmental conditions in Sarnia. The larger study was designed in response to a call from Health Canada to investigate the health of populations living in designated areas of concern in the Great Lakes region. An area of concern is an area with a growing environmental problem, where local residents are at high exposure to a variety of pollutants both at home and at work (Ministry of the Environment, 2004). The Aamjiwnaang First Nation has been exposed to daily chemical emissions from surrounding industry.

Research Design: In-Depth Interviews

This research used a qualitative design to piece together a complex picture and examine a social quandary characterized by risks to human health resulting from contamination. In the process I gained an in-depth understanding of this particular social phenomenon that is affecting a local aboriginal community (Creswell, 1994). A qualitative inquiry based on in-depth interviews was necessary in studying how aboriginal peoples understand and respond to environmental pollution and its affect on their health. In-depth

interviews allow for gathering rich data that will elicit the deeper understandings behind different internal and external social processes affecting understandings, behaviours and responses when dealing with the reality of living in a community afflicted by contamination and pollution.

The in-depth interview involves asking questions, actively listening, and expressing interest. Subjective meanings are revealed through the insights, feelings and personal experiences of the participant, and are solicited by the interviewer through encouraging, interrupting, allowing digressions, and initiating of new topics (Mishler, 1986 cited in Neuman, 2003). The interview process creates a setting in which the participant can express themselves comfortably, as if he/she were engaging in a friendly conversation, and this setting helps to create an atmosphere where a mutual understanding of the participant's individual experiences, and meanings can be discovered through personal perceptions and subjective apprehensions (Berg, 2004).

As a researcher, I sought to answer particular questions related to the experiences of Aamjiwnaang people, and was interested in how aboriginal peoples arrange and make sense of their surroundings (Berg, 2004). Through observing and examining the Aamjiwnaang social setting and individual behaviours, I was able to understand their attitudes and perceptions and how they construct their lived realities.

Sampling

The Environmental Committee (EC) of the Aamjiwnaang First Nation acted as the gatekeeper in this research. The EC allowed me to gain access to the reserve, and communicate with the Aamjiwnaang Band concerning the progression of the research. Gatekeepers are often useful in terms of gaining access to certain research settings and

reaching particular research subjects or informants (Creswell, 1998). They often protect certain geographic or social settings, and people sought as targets for research (Berg, 2004). Because this research examined how individual perceptions to health are understood in the face of environmental contaminants, and how an individual's social location is reflected in their understandings and responses to environmental contamination, aboriginal peoples may not be as willing to speak with an outsider about issues that deeply affect their well-being. Some aboriginal peoples on the reserve may not feel they can trust the author as an interviewer; therefore it is beneficial to gain the trust of gatekeepers who can subsequently vouch favourably for the purpose of the study and encourage potential participants to participate.

Participants were recruited using a purposive sampling technique, with the help of the Environmental Coordinator, a key member of the Environmental Committee. Because purposive sampling uses the judgment of an expert in selecting cases, the participants were chosen in collaboration with the Environmental Coordinator. The Environmental Coordinator had unique knowledge of the participant list, which was meant to ensure that certain types of individuals displaying certain attributes were included in the study (Berg, 2004). Furthermore, using a purposive sampling technique helped ensure the goal of substantial variation in the final sample (Neuman, 2003). The Environmental Coordinator devised a list of 30 potential participants that was broadly representative of residents on the reserve based on age and gender. From this, 18 were selected. The final sample consisted of 9 males ranging in age from 35 to 80, and 9 females ranging in age from 41 to 59. The large majority of the participants had in-depth knowledge of the issues due to the work of the Environmental Committee to inform the community of environmental concerns. The majority were well informed about environmental contamination in the area.

Data Collection

The participants were able to select from 3 different interviewers, the author (a female graduate student who herself is a visible minority person), a male graduate student, and a member of the Environmental committee (a female resident of Aamjiwnaang who is well known in the community). The author conducted 9 interviews, the other student researcher conducted 8, and the member of the Environment Committee conducted 1 interview.

The interviews were face-to-face and took place on the Aamjiwnaang reserve at a location chosen by each participant. The large majority of the interviews were conducted at the interviewee's home. The interviews took 1 – 3 hours to complete (most required 1 hour), and were audio-taped with the participants' consent. The participants were given an information sheet detailing the goals, purpose, benefits and confidentiality issues pertaining to the research study. They were also asked to sign a consent to participate before the interview began. The consent form informed the participant of the purpose of the study, what they would be asked to do as a participant, any benefits to them as a participant, and addressed confidentiality issues.

Participants were also asked if the interview could be audio-taped in order to transcribe the interview verbatim. The audio tapes were labeled and placed in a locked cabinet along with the transcripts.

Interview topics

The interviews addressed the research objectives and questions listed in the introduction. In addition, the following areas were addressed in the course of the interviews in order to gain a deeper understanding of the research problem:

- Historical representations of the land and community
- Health concerns

- Understandings of the relationship to land and the environment
- Environmental concerns
- Food consumption
- Subject location e.g. sense of self and construction of identity

A copy of the interview guide is attached as Appendix A.

Data Analysis

The transcripts were analyzed using N6 qualitative software. The theoretical perspective used in this study guided the coding process of the interview data. The interview data were coded based on the concepts of Kleinman's ecological model, and substantive themes related to health, pollution and the environment. The key themes that emerged from reading the transcripts were health, understanding the land and the environment (place), understanding environmental contamination, the importance of family and community (geography), spiritual connections (identity), the significance of traditional knowledge (history), and ways of coping. Working within these central themes, sub-themes emerged that detailed understandings, interpretations, behavioural responses, attitudes and beliefs towards health, the environment and contamination.

Initial open coding of the data was done based on the interview guide. Using the interview guide I created 6 categories for coding: background, understanding the land, understanding health, contamination and health concerns, environmental contamination and food, and coping. I lifted each participant's response verbatim from the interview transcript and coded them under each category. Each response was identified with the transcript number and gender of the participant. While doing this initial coding, I recorded thoughts and ideas in a separate document to refer to later. By jotting down these ideas, I saw the emergence of recurring themes throughout the transcripts, which made it easier to begin the next coding process.

After coding all the responses from each transcript, I then created subgroups in the initial categories to break down the data further. For example, under the category 'health concerns', sub-categories called 'definitions of health' and 'sources of health problems' were created. Each initial category was broken down into multiple sub-categories, and the interview data were coded and recoded until saturation.

After sorting the data in this way, I then interpreted the details offered in response to each category/theme. While analyzing and interpreting the data, I found both connections and contradictions between themes. This began the story telling of the lived experiences of Aamjiwnaang residents living a community surrounded by pollution and contamination.

Consistency of Interviews

Because three researchers conducted the interviews, to ensure consistency, two of the researchers (the two graduate students) and their supervisors reviewed the transcripts from the first few interviews to check for consistency. Each graduate student researcher was given feedback and modified their interviewing technique, if necessary, to ensure that thick-descriptions of the experiences Aamjiwnaang people were conveyed.

Verification and Credibility

Conclusions drawn from the interpretations of the data must be confirmed to assure that they are accurate representations of the realities of the group(s) under study (Berg, 2004). To verify the data I obtained, I checked the path to my conclusions, that is, I re-traced my coding and analytic steps that led me to these conclusions. I also had my advisor verify my coding 'schemes' and 'trees' to ensure that I was capturing the essence of the data. In addition to verifying my data, I created an audit trail by documenting the steps I

made in piecing together the data, and my personal assumptions and decisions throughout the entire research process. This material is easily accessible should another researcher request it for re-analysis. This is to ensure that another researcher could easily replicate this study, track this research process and draw comparable interpretations and conclusions. A member check was conducted with results and interpretations presented in an open meeting by the EC, and feedback was provided to the researchers at this meeting

As a researcher in this study, I analyzed, interpreted and described the data that emerged from the interviews. A common concern when doing qualitative research is the degree to which the researcher can assure that the findings reported are credible interpretations of what the participants said throughout the interviews. One way to ensure the credibility of these findings is to first acknowledge that the interviews were transcribed verbatim. Secondly, the structured analysis and verification technique, as detailed above, was employed to curtail misrepresentations, and boost the credibility of the findings. The interviews were conducted in a way that the participants felt comfortable speaking with me about their experiences, which also helps to ensure credibility.

Every effort was made to create a comfortable environment for the interviewee, and to encourage free flowing responses from the participant. My personal views and assumptions were not imposed on the participants, nor did I judge the ideas or the reasons given by the participants for their personal behaviours and decisions. I approached the interview as documenting the stories told, while at the same time listening and empathizing with the participants. Throughout each interview, I engaged in active listening, probed in necessary areas to generate more insightful responses, and interest was shown throughout the entire interview to assure the participant that their views and stories were valuable. Finally, the member-check tested and confirmed the credibility of interpretations.

Limitations of Study

By using a gatekeeper in this study, diversity of the sample relative to this community was limited. Selection of participants sought to develop a sample that represented diversity in the following criteria: males and females, people of all ages, people who are single, married, parents, elders, of varying educational levels and occupations. The goal was to select participants who reflected the wide range of the people on the reserve.

The Environmental Coordinator provided us primarily with participants who were well-informed about the environmental concerns in the community (e.g. members of the environment committee and elders), which resulted in data that depicted the experiences and understandings of a cluster of 'authorities on the subject'. This may have biased the study towards more articulate or outspoken members of the community. The sample included only a small number of participants who were less-informed about the environmental contamination on their reserve, or individuals who had less decision-making power in the community. This provides insights primarily from among the best informed and knowledgeable members.

Having three interviewers may have been also a limitation in this study. In using more than one interviewer, different interviewing techniques were employed, which resulted in slight differences in the data obtained. This meant that the questions that were posed to the participant might have been presented differently, and decisions about where to gather more information, e.g. probe, might result in some of the interview data emphasizing different issues or concerns. Each method of interviewing reveals slightly different ways of understanding the same reality. These differences in data gathering, however, can also be viewed as contributing to the credibility of the findings. Berg describes using multiple researchers as a form of triangulation that combines different 'lines of sight' for a more

substantive picture of reality (Berg, 2004). Therefore, having three interviewers on this project potentially illuminated the different sides to the experiences and realities of the Aamjiwnaang people as each interviewer brought their subjective interviewing techniques. Where interview transcripts provided confirmation of interpretations, credibility was enhanced (Fielding and Fielding (1986) cited in Berg, 2004).

Researchers studying any social phenomenon may unconsciously appeal to their own personal biases. I tried not to impose my understandings and beliefs when conducting the interview. However, when interpreting the data, I may have been influenced or guided by my personal perspectives on this subject matter.

Chapter 5

Tracing Aamjiwnaang Land from Past to Present

This chapter details the historical relationship between the Aamjiwnaang First Nation people and the reserve land based on government documents and recollections of the people interviewed. This section deals with the historical, economic and political assessments of Aamjiwnaang land and the environment. Refer to figure 1.1.

Aamjiwnaang Land in the Past

The Formation of Aamjiwnaang Reserve

The Aamjiwnaang Nation resulted from a divide in the Chippewa Nation when treaty lands were established. The Chippewas, along with other Southwestern Ojibway bands, began to settle in Southern Ontario in the late 17th Century. Between 1818 and 1825, the Chippewas and the Crown conducted negotiations aimed at the surrender of a large part of Chippewa territory. In April 1825, the Chippewas entered into provisional treaty 27 ½, ceding their rights to 2.2 million acres of land referred to as the Huron Tract. However, they retained their rights to four specific areas (reserves): Walpole Island, Aamjiwnaang (formerly Chippewas of Sarnia), Kettle and Stoney Point First Nations. (Ontario Court of Appeal, Factum, 2000). These reserves split apart the Chippewa people.

This participant talks about the historical roots of her family. Because Treaty 27 ½ divided the people and the land, she talks about the origins of her family, and makes reference to her inability to see her family members due to international borders.

Female, Age 41: My grandfather told me our family originally came from Mount Pleasant-Michigan area, Saginaw Chippewa's. He said always remember that's where we came from. We never had borders in those days, so he said we could visit them and come and go as we pleased. Then once they set that border, it was like they had to stay there and then we were separated.

Landscape

When the Aamjiwnaang residents were asked whether their ancestors told them any stories about the reserve, many of them spoke about how their ancestors described the landscape and physical appearance of the reserve. Common to most responses was that there was vast land, more animals, less population, and no industry.

Male, Age 48: My grandfather and my father told me how it used to be before industry came around here. The pollution is one main factor because they said it was so beautiful around here before all the trees [he says this with a smile]. I guess the main difference was the pollution.

Male, Age 65: He described what was on this land, including beavers, otters and moose. Many of the animals that you don't see here anymore, they were all in this territory. When most of it was given up in trade for these four pieces of land, the settlers started to clear the land. They cleared a lot of areas including some of the large trees that used to be here. A lot of these trees were really massive, they were big; they were original growth trees. I don't know what diameter and height they would be, but there were a lot of them - hardwood trees, maple trees, oak trees and that kind of stuff. When they cleared, when they were going to lay the railroad track in the 1800's, they harvested a lot of these trees and cut them up into planks and ties.

Before industrialization made its mark in this territory, the Aamjiwnaang community was more rural.

Female, Age 51: I think we didn't see the build up of plants; we didn't see the newer housing. I don't think we ever had cable. I think when we were young we used to have kerosene lamps and a wood stove for heating and an out house.

This resident talks about the Aamjiwnaang territory as an expanse of land, where hunting and harvesting could be done for miles.

Male, Age 62: I was told stories about how far the reserve extended into the city of Sarnia and what was to the East, where they collected and harvested their food in the fall, and where they hunted. I hunted right from here down to the other side of Chatham and all the way to the coast of London. So I hunted the whole area here.

Food Acquisition and Consumption

Older interviewees grew up eating off the land, including traditional food - rabbits, deer, squirrels, fish as well as fruits and plants.

Male, Age 62: *When I was younger, we ate and it was our main meat supply in the winter - the rabbits and the deer and the squirrels. But not so much anymore, like I still hunt the deer and I still hunt for rabbits and my wife still cooks it.*

Female, Age 42: *I did eat the meat growing up; my brother was a hunter. I hunted with him, and we'd go in the bush to catch rabbits, squirrels. He and my mom fished all the time, and we used to eat the eggs out of the fish. We ate everything off the land. We'd go in the bush and get the wild mushrooms; we'd get the puff balls, we'd go in the bush for the apples, and there are pears, wild raspberries, strawberries back there. I grew up eating all that kind of stuff.*

Farming was also practiced.

Female, Age 41: *My dad says 'yeah', the land used to be used for farming. We'd go driving by the plants and he'd say 'oh I remember there being a big bean field or big corn field or something there'.*

Male, Age 51: *We lived off the land; my grandfather had an orchard on Scott Road with apples, grapes, just stuff to survive on. We had a big family garden which we canned food all the time that my grandmother picked. I lived with my grandparents. Oh yeah, we lived off the land quite a bit. When I was a kid I helped gather maple syrup on Maple Road, on the east side of Scott Road, and we just lived off the land pretty much, and traded. My grandfather used to trade with farmers. He'd go get the honey and maple syrup and traded them for milk with local farmers.*

Female, Age Unknown: *My grandparents were vegetable farmers, and they were also fruit farmers, so on the homestead we have many apple trees because I inherited that land there. They grew potato on what is now Chippewa Crescent, which is where my family lived.*

In particular, many families farmed as a way to sustain themselves and their families in the absence of government social assistance programs.

Male, Age 65: *There was more farming being done by our people, including my grandfather. They used the land for agriculture so that they could sustain themselves because there was no welfare or what they used to call relief. They were making do with what was on the land.*

Unaware of the consequences for health, the earliest pollution of reserve land with industrial by-products produced both entertainment and income for residents. Children collected and played with mercury, and often times sold it to make money.

Female, Age 45: *Growing up, my dad and a lot of people on the reserve would dig for mercury, play with it, and sell it. We used to dig it up in our yard. So that's another rumour about how Dow dumped over 400 tons of mercury into a dump site*

right across from where our cemetery is. It got buried over, and now it's a big huge parking lot. So, all this mercury is in the ground.

Female, Age 42: Some of them were kids, but some of them have been doing it for years before. One guy I know, he's 55, and he did it. He knows somebody that was younger than him that would do it too. That was a way of making good money.

Aamjiwnaang Land Today

Nature

In speaking about how the land has changed over time, the residents of the community generally described the noticeable changes relating to the natural landscape of the reserve. Many of the participants spoke about the decline of certain animals, insects and plants that were once in abundance.

Male, Age 43: The last time I was here was the early sixties. Back then, most of what I remember was that the wildlife was much more proficient then. I had an uncle up the road on the other side; his house isn't there anymore and he had pet raccoons and what have you.

Correspondingly, this participant discussed the fading presence of particular insects and aquatic life, and described changes in migratory patterns as probably a result of chemical dependence.

Female, Age 42: The Monarch butterflies, they used to be here all the time. We used to see those walking sticks, praying mantises all over the place, and you don't see those anymore, very rarely and I don't know why. There used to be frogs all over the place, the little green and black ones, you just don't see those anymore. We did see cray fish and bloodsuckers, you don't see those, although there was a flood last spring and there were bloodsuckers on my neighbour's driveway. I had to go check it out because I hadn't seen them in years. Humbugs, you used to see those all the time too, and you don't see those very often. The geese used to fly away, they don't fly away anymore. I think they're all chemical dependent. You drive around and you look where those geese hang out, they're at the plants. They're dependent on it; I truly believe that.

Modernization and Urban Development

Another common thread that was revealed when the residents discussed the changes in the community was a shift from an agricultural and hunting-based economy to one that is

characterized by development, modernization, competition, and industrialization. The Aamjiwnaang reserve resembles a residential district that could be found near any city, characteristic of a small urban area. Many of the residents believe that development is one of the most significant changes they have noticed in their community.

Female, Age 52: The reserve is more developed, with more housing and buildings and roadways. There was a lot of bush area when I first came, especially around the senior's home; it wasn't developed at all.

Male, Age 62: I haven't really noticed anything else other than the number of houses being built here. The land here is getting smaller as our population is growing, and we don't have the infrastructure in a lot of the areas where we should be building.

When this resident was asked how the reserve had changed over time, she first recalled living in a time where there were fewer houses, no cable, and no electricity, and then contrasted that life with how her life is today. She particularly mentioned how she has become modernized.

Female, Age 51: As a matter of fact I think I got more modernized. We are close and more integrated with the city. I went to school over on Bluewater until I was about maybe 7 or 8. I went into town and completed highschool and college. I think we were kind of more modernized, we weren't in the bush. You got the bush back there [referring to her backyard], but other than that you know there are houses all around.

This resident goes on to discuss the consequence of modernization in her community. She believes that the community has become competitive and individualistic, which might disrupt their culture.

Female, Age Unknown: I guess you can call it westernized, mainstreamed; we are competitive, we are not a community, we are divided. The ones that are keeping the traditions and the culture alive are the ones that are targets now.

This resident also has concerns about the social problems in the community, which she feels are indicative of moving towards a modernized community, and losing a connection to their traditional and cultural ways.

Female, Age 45: *From what I've seen here on my reserve, from when I was growing up until now - major changes that are not for the good, probably for the worst. Because when I was growing up with my sisters there was always something to do, we kept ourselves busy all the time. We were playing in the Creek and there were always sports that were offered to us. There were always a lot of people, you know, people willing to donate their time to do things with us here in the community, whether it is baseball or volleyball. Now you see, especially on a weekend, all of these kids just wandering around with nothing to do and getting into trouble, like the drugs and the alcohol. I think that's what's causing a lot of the social problems because there's just the lack of connection and people trying to help and spend time with each other.*

Along with residents discussing how they and/or their community have adopted the modern ways, others specifically discussed the incursion of technology on their territory. This resident discusses the technological advancements on the reserve.

Male, Age 48: *I would say the technology; the technology is a lot more. The services that we have now we never had when I was a child, such as street lights and paved roads.*

The nature trails are less used and visible in the community. This participant believes that residents are losing their connection to the natural world.

Female, Age Unknown: *There are no nature paths. Chippewa Crescent had a whole bunch of paths leading to the park. There used to be wolves around here, well there are still coyotes you can never get rid of them, but there were wild animals. You don't see those animals nor do you see those trails. If we still had those trails around here, you probably would see more animals and people would be more connected.*

Industrialization

Most residents contrasted the past to the present noting the growing presence of chemical plants around the reserve. In discussing the visibility of the industrial plants, many of the residents also mentioned the odour(s) from the industrial infrastructures.

Female, Age 48: *I know there wasn't any chemicals back then. There were more houses, more plants, more stink, more smoke and now we get threatened with evacuations. Sometimes you can't open your windows, and sometimes you can't use those HRV units.*

Female, Age 43: *My kids grew up being used to seeing the chemical plants, but it wasn't there when I was a kid. There were a few chemical plants, but not as many as there are now.*

One resident, however, noted that there was always industry surrounding their community.

Male, Age 62: *Thinking back, well the industry that was here when I was growing up was Dow Chemical. I used to ride my bicycle down there, and there was also Canada Steel. SunCor was just starting to be built then, Imperial Oil was here, so you know industry has been here for quite a while.*

He also acknowledged that the pollution in the community is not a recent phenomenon.

However pollution has changed in form over time. He spoke of improvements in air quality when higher smoke stacks were added, but of an increase in water pollution.

Male, Age, 48: *I don't think the pollution was any much different than it was back then, it is about the same. Back when I was a kid, I would say the pollution was more airborne than it was in the waters. When they complained about the air quality around here, they made the smoke stacks higher and so the pollution traveled out of the region or area. There was less pollution coming out of stacks because we found it was flowing into the water.*

Chapter Summary

The residents of the Aamjiwnaang community talked about their historical, economic and social understandings of the land and the environment based on stories told by their grandparents and ancestors. Common to most stories were changes to the natural landscape due to development and industrialization. Similar to reports from RCAP (1997) about the consequence of severing aboriginal people's ties to the land and environment, the residents talked about losing their land, and therefore control over their livelihood. Many of the residents talked about the decline of plant and animal life, the inability to live off the land, and hunt and gather due to a loss of available land space. With these understandings, we begin to see how the past has been replicated in recent history. This is noted in motives to cede aboriginal lands in treaties in exchange for revenues. The Aamjiwnaang First Nation

has leased and sold some of its land to industry which has had consequences for their traditional lifestyle and economic well-being.

The differences in perceptions of the presence of chemical plants and pollution around the reserve may be attributed to the way the residents think about industry and the pollution. The history of petrochemical plants in Sarnia dates back to 1858, with Imperial Oil establishing one of the first refineries (City of Sarnia on Economic Development; 2005). It is clear that chemical plants have existed in this community long before any of the residents interviewed were born. Vaughan and Nordenstam's (1991) discussion on how unequal prior experiences with a hazard inform perception and recollection of that hazard is important here. Different memories or recollections of pollution and industry might be related to the growing presence of petro-chemical plants, and other pollution causing industry. Some may have only recently become aware of the pollution as a result of awareness-raising activities of the Environmental Committee on the reserve. Others might have more knowledge about chemical industry from simple observation. Increased regulation has changed the form of pollution that residents are exposed to, for example, higher smoke stacks carrying pollution away from the reserve, but has not necessarily reversed the loss of the natural habitat.

Chapter 6

Social Representations of Life and Interpretative Frameworks

This chapter draws on both the folk and popular domains in first understanding how the Aamjiwnaang people relate to the environment and land through historical processes - their traditional understandings, representations and symbolic beliefs and value systems. With these representations of life, we then see how the Aamjiwnaang people, within the popular domain of family and community, manifest these interpretations and perceptions about the environment in their behavioural responses to environmental contamination while still influenced by economic, social, and cultural pressures.

Spiritual Teachings about the Mother Earth

The Seven Grandfather teachings and the Medicine Wheel are the guiding authorities that delineate an aboriginal relationship to the land. According to the following quote, the Seven Grandfather teachings define how the aboriginal person is to live, particularly with an affinity for the land.

Male, Age 48: Our teachings are what help us to maintain the life of our land. The Seven Grandfather teachings, those being truth, honesty, bravery, wisdom, humility, love and kindness were put altogether and were the teachings that banded us together for the love our land.

This resident further describes the meaning of the Medicine Wheel. The keepers of the Medicine Wheel keep the balance of Mother Earth. If the Wheel is thrown out of equilibrium, there will be disruption in all elements of Mother Earth-Air, Water, Earth, and Fire. Using the Medicine Wheel as his point of reference, this male resident believes that white people, keepers of Fire, have disrupted the natural progression of the Wheel, which can further account for the rapid pollution of the environment.

Male, Age 48: *The four colours of the four directions form the Medicine Wheel. The yellow people were given the direction from the Creator to look after the air. The red people of the medicine wheel were to look after the earth. The black people on the medicine wheel were to look after the water and the white people of that medicine wheel were to look after the fire. There is fire in every living being. It is in us, in the trees, in the industry that surrounds us, the power, whatever there is, we call that the power. Now technology is advancing so fast it's almost becoming destructive. It is becoming too fast, and that's where we say the white race is letting that fire go out of control. It is getting out of control and disrupting all the other aspects of the Medicine Wheel. The air, that's where we are getting our pollution from, from the lack of respect for the fire, the water and also the earth. So they are all intermingled, and because of that fire, it is going out of control. That's what is happening to Mother Earth.*

A Reciprocal Relationship with Mother Earth

Aamjiwnaang residents define their relationship with the land, also known as Mother Earth, in reciprocal terms. The land provides for them as they pledge to be guardians of the land. This reciprocal relationship is based upon their appreciation of the gifts from the Creator; the gifts of life, nature's resources, and the ability to use the land for their subsistence. In many respects, the residents feel that having a profound gratitude for Mother Earth maintains their healthy state of being. However, within this community, this connection is difficult to maintain when Mother Earth is abused and compromised by man-made projects that produce ailments in the natural environment.

Male, Age 50: *We use the land, and our kids are taught not to just pick up a rock and walk away, but to first ask permission first from the Creator. They carry tobacco, but they don't smoke it. The kids will take tobacco, lift up the rock, put the tobacco down, and then ask permission to take the rock. Then they are welcome to take any rocks they need. You see they are giving something back, for whatever reason.*

Female, Age 43: *Well, the Earth has everything to sustain us as people. It has all the elements that we need to survive. It has the water and the plants. Everything is there to feed us, to nourish our bodies, to keep us strong and healthy with the medicines that are out there to cure those things that ail us. The Earth has been abused in that way - the water has been polluted, the air has been polluted, the plants are turning toxic and they're not able to do the same kind of healing that they used to be able to do. Some of those plants are becoming extinct because of the pollution and the toxins that are being emitted into the air.*

With this understanding of how the destruction to the environment came about, this community remains deeply concerned about the sustainability of their land. In speaking with the residents, there is a degree of care and respect for Aamjiwnaang land. Each resident tries to do their individual part in recognizing the importance of maintaining a close relationship with their environment, even if it is as little as cleaning up the garbage that is laid by the surrounding community.

Male, Age 48: We are supposed to be keepers of the land and yet I still notice the litter, so I try myself not to litter as much. When we have to speak up for the pollutions that are happening on our land, I am there also to help support the cause. That is about all I can do really. You know, just be a participant.

Male, Age 43: We are part of, we don't own. I think that is the easiest way to put it. If you went for a walk along the riverfront right now you would see garbage everywhere, fish guts everywhere. The non-natives come here and fish on our shorelines because all through the shorelines are industrialization and they just make such a mess of the place. When they leave, when they are all gone, it is all magically cleaned up and we'll start fishing.

This resident exhibits her appreciation by simply going outdoors to marvel at nature's process.

Female, Age Unknown: I wake up in the morning and go outside. The last thing I do is go outside before I go to bed. I am energized by being outside... being outside makes me rejuvenated. When I come inside I feel boxed up, and there have been lots of times I would just sit on my chair and look around and I am thinking "I know about 150 things I could do around here", but I just couldn't do one and complete it unless I am outside.

Regardless of what form of acknowledgment Aamjiwnaang members demonstrate, the underlying value system of this community is to care for the land first, before laying claim to it. If there is no concern for the land, the land will lose its fundamental purpose to provide for those that will appreciate it.

Aamjiwnaang Land: A Place to Call Home

Origins of Family

Family is important when we speak of aboriginal people and their connection to the land. Specifically, the Aamjiwnaang reserve is a familial community by the simple fact that almost all the residents are related. Spreading to the boundaries of this reserve, there reside brothers, sisters, grandparents, aunts and uncles to virtually every Aamjiwnaang member. Regardless of whether one is a close or distant relative, every resident can lay claim to having a family member living on this reserve.

Female, Age 45: My dad, my sister and her family live here. I have two sisters and their families living here, and a brother and his family living here, as well as some relatives.

Origins of family on this reserve are not only noted by the physical presence of family members living in a close-knit community. With a strong historical foundation, this reserve has many local roads named after the founding ancestors.

Male, Age 48: When we talk of ancestry the Nahambins, Williams, Adams, were about the originals ones that were here.

Furthermore, those relatives who no longer reside on the reserve still maintain a connection to Aamjiwnaang as this 42 year old female describes a home away from the reserve is somewhere to 'lay your hat':

All my family lives here. Two of my sisters have homes here, and my two nieces have homes here. One brother just lives in the south end of Sarnia, but he's here quite often. I do have a brother that lives in London, but he's here, or in Kettle Point...It's just a place to put your hat, you know.

Home

In spite of the social and cultural dilemmas the community members' face, almost all the participants continue to feel that the Aamjiwnaang reserve arouses a sense of belonging.

Aamjiwnaang is a reserve they call 'home', and to detach from this would mean that they are unconnected to their family, spirit, friends and 'place'. For the Aamjiwnaang residents, the Aamjiwnaang reserve provides a sense of security and identity.

Female, Age 45: I think that's probably what the connection is here - we know this will always just be our home. Regardless if you leave for twenty years, you know that you can always come back here and be welcome because we're a member of Aamjiwnaang. It's probably more of a spiritual connection more than anything else - more than the physical. We always know there will be family here.

Security is often characterized by the closeness of the community.

Female, Age 42: The Neighbours are close enough that we still look out for each other. They are just like family because we've known these people all our lives. It's a close community; we do a lot of things together, but that's normal.

The following quote is a thoughtful expression of the importance of 'family' in Aamjiwnaang.

Male, Age 43: To move to a place where I could throw a stone in any direction and hit family; so what do I like about it best, is the aspect of family.

Their home is a cultural expression and a spiritual connection. Some residents continue to pass on the legacy of their forefathers by passing on their homes to children and grandchildren.

Female, Age 51: As a matter of fact my house that is built here now was my mom and dad's old homestead, but they moved down the road to a house in 1963, and we lived there for a while. I've always lived on the reserve basically.

Apart from the spiritual and cultural connection to this place, this participant also defines his concept of home in relation to the acquisitions and rights accorded to the community.

Male, Age 50: It's home to me. Well, we have the tax exempt and if you want to buy some booze we don't have to pay the taxes. If you lived off the reserve then we would have to pay the taxes. Our gas is cheaper, our cigarettes are cheaper, and my family is here. My friends are here, people I grew up with, grandchildren. After I retired in 1995, I asked my wife if she wanted to move out West. I was thinking of moving to Alberta, but she didn't like it. I love out there.

Sacred and Special Places

While people talk of the Aamjiwnaang community as a place to call home, many of them also make reference to the sacred and special places found within and around their reserve that further connect them to this place they call 'home'. The residents described various places that they considered special or sacred. Each of them could easily identify some aspect of Aamjiwnaang that they held in high regard. Whether they described the burial grounds, the flowing waters, the bush or the pow wow grounds, almost every aspect of Aamjiwnaang is a special place to someone.

Female, Age 51: *I think the powwow grounds are sacred as well as the Church. We have traditional powwow every year, which shows our cultural heritage. We also have Native Solidarity Day, where the community gets together to do their events and have a fun day.*

Female, Age 43: *The graveyard, I go to the graveyard. It's just down the road here by Sunoco. I have so many family members there, and I put flowers down and it makes me feel better to go there.*

Male, Age 48: *Our burial site, even though it is surrounded by the industry around here. We still hold that area very sacred and we try to protect it as best as we can from outside pollutions. We try to keep it as clean as we can. It is what I call a power area. Every part of Mother Earth has these power areas; they have this sort of aura which is an energy that you can feel. I believe that it is a power area even though the pollution is still around here. I believe there are still some powerful areas around here.*

When we asked this resident why the burial site is so sacred, he responded by noting:

Because of the reverence that we have in the spirit of our living. We knew that the spirit occupied that body one time so we still respect that person's body that lays there.

Interestingly, people did not always define a sacred place based on existing cultural representations. Some of them spoke of places that became unique to them over the course of their lives and experiences.

Male, Age 62: *Myself, I like to go on the eastside where I do all my hunting. I like to go and sit there. I like to think and be alone even though I can do it here [in the house], my wife doesn't bother me, I just read and think. Usually when I go back, I*

don't take any papers I just take the book. I've been on council for 30 years now and I go back and think about where we come from and where we are at today and, where we should be 10, 15 years from now.

The entire landscape of the reserve was also mentioned by many people, particularly the river. The river represents tranquility and calm; a place to just 'get away'.

Female, Age 42: I call them my thinking spots, if I'm feeling troubled or whatever. There is this one spot along the river I go to. I grew up along on the river so I'd always walk up and down there. I go there and sit all by myself, and you've got the water and the cars behind you, but it's just a place to think.

Female, Age 42: Down by St. Clair River, that's one of the places where I do some of the ceremonies. I go down by the water, offer tobacco and pray for the water to help keep it clean. That's also a fishing spot for a lot of people.

Male, Age 43: I go up to a pond on the other side of LaSalle. You can take a walk through there. There is a trail, a nice clear path all the way through and you can get lost in there. Find a spot, sit down and just relax. That to me is what's sacred about land.

The significance of the river and offering tobacco is understood in the following quote:

Female, Age 41: If I hear there's been some kind of spill or something I'll go down to the river and offer it [tobacco]. If I'm having a hard time and need to go sit by the water and pray, then I do that. Sometimes if I'm going for a walk I'll do it [offer tobacco]. It's just not any specific time.

The band office also appears to be a special place to some people, not only because of its functional purpose, but also because it has always been in its current location.

Female, Age 42: That's where, as far as I can remember, that's where the band office has always been, in that area near the ball diamond.

Aamjiwnaang land is not just a place to live. The land provides deep roots to the community, connects friends and family, provides solace and a spiritual presence, and defines their heritage and cultural aspects of their community.

Outsiders: Differing Approaches in Understanding a Relationship with Mother Earth

One of the ways in which Aamjiwnaang people distinguish themselves from non-aboriginal people is by their respect for nature and the land. Aboriginal people closely identify with the land, taking on the responsibility to care for it. They acknowledge and appreciate Mother Earth because it provides for and sustains them in keeping them a healthy and spiritual population.

Female, Age 42: We know how important it is to take care of the land and the water. It's our responsibility to do that; to take care of those next seven generations that are coming.

History also plays a part in distinguishing the close relationship aboriginal people have with land in comparison to non-aboriginal people. The land defines almost every aspect of aboriginal culture. More importantly, because aboriginal land is sacred, if it is taken or ceded, they lose a part of their identity and heritage.

Female, Age 51: I think they [non-aboriginals] didn't have to grow up trying to protect their land that was later leased off or sold by their ancestors.

Female, Age 45: I think we have a closer connection because this is where our ancestors lived. I believe this because we're aware that this is the land that has always been inhabited by generations of our ancestors. This is where a lot of our ancestors are buried.

Some residents consider non-aboriginals to have less of an appreciation for nature because they have other preoccupations in life.

Male, Age 48: They [non-aboriginals] have to eat, they have to survive and that's the same way with our community. The outside community, they know they have to have a job, they have to survive and so that takes precedence over caring about the air quality, the water quality and the earth quality. They are focused on what is happening now. They need that job and so they don't have that care and love for the land.

With these preoccupations, Aamjiwnaang residents believe non-aboriginals are unaware of the situation facing Aamjiwnaang people and their deteriorating land base.

Female, Age 51: *I don't think they are really aware of the situation. Only when we have a chemical spill and there's an evacuation on the reserve; that's the only way they know. Other than that they don't know that Talfourd Creek is contaminated, and unless you let people know, then they don't know. If it doesn't affect them, there is really no concern for them.*

This lack of awareness has been translated into a lack of concern for their well-being from the point of view of this resident. She distinguishes between a reaction to a chemical spill that happened in a nearby non-aboriginal community, and the reaction to chemical spill(s) that seem to happen on a daily basis in her community.

Female, Age 43: *I don't think they really care because they're not in the middle of it, and it doesn't concern them. But as soon as it does, like in Corunna, everybody was right on top of it, including the Mayor of Sarnia and the executives for Shell. Do you know the number of times that it's happened here? That was the biggest news story at the time. It was about all the people that were getting sick there, and meanwhile we do this every single day. It happens once and everything is changed down there now [in Corunna].*

When the resident was asked why 'they made a big deal' about the spill in Corunna, she responded by saying:

Because they're non-native, and we're native. To me, it's like it doesn't matter what happens to us, as long as it doesn't affect them.

The above quote echoes the historical treatment of aboriginal peoples, with the legacy continuing today. The destructive treatment of aboriginal peoples was based on western ideologies that reified inequalities, and where differences meant differential treatment. Unfortunately, these ideologies have not been forgotten as the above resident believes that native people are still treated differently than non-native people.

For some, however, there is a concern that there is no longer any difference between how aboriginals and non-aboriginals view the land. This participant believes that people on the reserve are not particularly aware of the health of the land on their reserve. He notes that:

Male, Age 50: *They don't know. The reserve itself doesn't know because many of them are not out there. That's why you are here talking to me because we are out*

there everyday. I can tell you where everything is here on the reserve because all my life I have been in the bush.

This participant agrees by stating that:

Female, Age 43: I can say some, not all. Not all people from Aamjiwnaang think the same way. Somebody who doesn't have the connection, or hasn't had a teaching about what Mother Earth is, or somebody that doesn't believe in the Native culture, might not see the differences.

Depending on whether the aboriginal person recognizes their connection with Mother Earth, there may not be any distinctions between how aboriginal and non-aboriginal people view the land, and the health of land.

Proximity to the Chemical Plants

The Aamjiwnaang residents believe that the outside community might be more receptive to their situation, and have a greater concern for the land if they actually lived in or around the Aamjiwnaang reserve. This resident finds that the reaction from the larger community might be different if they experienced the life of Aamjiwnaang people.

Male, Age 67: I don't think that a lot of people in town think of their land as contaminated or else I think they would have a different view because they don't live here. I think if they lived the same way we do, they'd have a better understanding of why I don't want to grow a garden here. I'll grow a garden in Sarnia as far away from here, from Chemical Valley.

Furthermore, proximity to the industrial plants plays an important role in how people view the health of the land on the Aamjiwnaang reserve, thus informing their perception of the health of the land.

Male, 67: I don't know if a lot of them really have a perception of what we live in unless they've seen it from the air, and see chemical plant after chemical plant after chemical plant. There's Sarnia reserve right in the middle of it. I don't think they really understand or see it that way.

Male, Age 51: There are a lot of people that I believe are on our side, like OCHOW. I think there's more people than we really imagine. I know that people in Corunna have been affected from the gases or Shell and they sued. They had a class action suit.

Male, Age 43: *If you go down river, the people in Corunna, the people in Moore town, they are as affected as we are. They are more sympathetic to the cause.*

People come to our reserve for a variety of different things and depending on how you drive in here that's how they see the reserve. You come in through the river where it's all pristine, "oh you guys have such a nice reserve it's big", but if you come in through Chemical Valley, it just blows your mind.

In addition to this, depending on the way some people perceive the health of the land on Aamjiwnaang reserve, their behavioural actions and reactions are indicative of their perceptions. This resident tells a story of her encounter with aboriginal outsiders:

Female, Age 42: *I had all these people from Kettle Point over, and when they were going home I made them stand up with their arms out and their legs spread open. I said "each household has one of these [wand with a light] and we have to check you to make sure you're alright to leave. We have to make sure you didn't pick up anything from the chemical plants". They all stood there and let me do this; they thought that it was a normal household thing - that the plants would give us [the wand] to check our guests [laughs].*

A Diminished Relationship with Mother Earth

The residents of the Aamjiwnaang reserve discussed the changing nature of their relationship with Mother Earth today. A distinguishing aspect in the lives of aboriginal people is their deep regard and mutuality with Mother Earth. However, the residents believe that this relationship and connection is slowly dwindling away because they are unable to use the land as their forefathers did. With growing industry surrounding the reserve, this resident talks about her inability to use the land for traditional ceremonies.

Female, Age 43: *There's not much area to do anything in because it's all surrounded by industry. Even through the middle of the reserve are chemical plants, pipelines, railroad tracks, and there's not much land left to develop or to do anything, like to go hunting. In this little community, there's not much area to do anything like that because there is hardly any land space. The Ojibway people have ceremonies six times a year, and normally they're held in remote, secluded areas, but we can't do too much here.*

Specific concerns of the community rested on the fact that they are unable to live off the land in traditional ways.

Female, Age 41: My ancestors probably planted their food and grew their food. I mean they relied on Mother Earth for everything, like, their food. I wouldn't do that, not here. If I was to move somewhere where I was away from all these chemicals, I would. That would be the first thing I would do is make a garden in my back yard. I'd love to have a garden, grow my own food, and show the kids. It's cheaper to grow your own food [laughs].

The desire to plant a garden was a common thread found throughout almost all of the responses from the residents. Many Aamjiwnaang members had gardens to grow their own fruits and vegetables in the past, but as industry grew and the chemical spills became recurring incidents, they became apprehensive about planting gardens. The residents have lost the ability to engage in this activity because of a fear to use the land to cultivate foods and in so doing they have lost part of their bond with Mother Earth.

Male, Age 50: I will not have a garden. There's no way that I'll grow anything here. I want to have a garden so bad, but I think she's [Mother Earth] too polluted in this area. Not only this area, all over the world. But by being in the centre of all of this, there's got to be contamination everywhere. So I refuse to have a garden, I wouldn't want to eat anything knowing that it grew here.

More pressing is the community's concern to pass part of their culture to future generations. Gardening is not only a mode of subsistence, but also a way to teach others about their culture and way of life. According to this resident, the children are beginning to lose these teachings because of the precarious nature of the earth.

Female, Age Unknown: It would be nice to plant a nice garden out there that you could eat off of. We used to have this thing when we were teaching the kids about the relationship with the earth about 3 years ago. We used to have bean plants in their garden. Everyday they would get out there and pick beans in the morning and then pick beans at night whether it was only 5 beans or whatever, to show them that they were contributing to their family. But I have never ever been able grow anything more than that.

In general, Aamjiwnaang land has lost the properties of a healthy 'place'. Mother Earth no longer has bountiful greenery, blossoming plants and plentiful resources. The land is simply

not conducive for a community that focuses on use of land for hunting, gathering and agriculture. This resident sums this up in the following quote:

Male, Age 48: *The pollution has killed off some of the plants around here. When I was a child, wild rhubarb used to grow around here and you don't see wild rhubarb around here anymore, very little. Other things like the morels, they are a big wild mushroom, and I don't see those anymore. You don't see these things because of the pollution that is being seeped into the ground from the creek. You cannot harvest anymore.*

Gardening: Assessing and Rationalizing this Decision

Most of the residents have decided not to garden in their community based on their understanding of the effects and spread of contamination. For most of them, there is a belief that the toxins that are emitted from the chemical plants will linger within the waters and run off into the soil, penetrating the soils and any other sort of vegetation grown from it.

Female, Age 51: *My dad, he used to grow his own plants; like he used to grow tomatoes, potatoes, radishes and onions. We'd have to weed the garden, and water it if it was still dr. We used to eat the food that he grew because we never saw a problem with it. But today, I don't think I would eat anything out of the garden. I would think there would be too much acid rain [she laughs]. Well you think when you are surrounded by chemical plants, the air is probably contaminated and the run off from anything is probably affected in the groundwater, maybe not so much on top but it seeps into the ground.*

This resident agrees that the toxins are penetrating the soils and perhaps the food that is grown in it, but she also mentions that there is a lack of land to use to plant a garden.

Female, Age 43: *There's no land to use number one, and the land that is there is full of toxins and mercury. I know they've been doing a lot of testing and find different stuff in the soil. If it's in the soil, it's obviously going to be in your food that you plant. My grandfather always had a garden and now I wouldn't even think about doing that now.*

This female resident hints at the idea that there might be a connection between a diminished growth cycle of her transplanted flowers and the pollution in the ground.

Female, Age 42: *I transplanted flowers from my grandmother, and flowers don't bloom the first year once you transplant. The first year my daffodils grew about twelve inches high; the next year there was flowers, and the next year there was*

flowers. One year my flowers only grew six inches high...what the heck happened! Maybe something got to them and shortened them for the year because I've had them for quite a few years. That one year they were all dwarfs so what the heck happened here?

Conversely, another resident believes that people are over-exaggerating the effects the chemical plants might have on their ability to plant a garden or use of the land. He supports his claim by mentioning that he and other members of the reserve continue to plant gardens. He does not see this as detrimental to health, using his own experience to support his view.

Male, Age 62: Some people still have garden's here. If my tomatoes grew I would eat them, then again I don't put any chemicals in, and I just water them. But I think people over exaggerate every time there is an odour outside. Well they feel they can't have a garden because it's going to get contaminated. A lot of them just blow it totally out of proportion. I had a garden down at my other house and I had a garden here, and it hasn't killed me.

He goes on to state that the reason why people are not gardening as much is because there is a lack of interest.

Male, Age 62: Hunting we can continue doing, but with farming there is no interest. There is no interest here. We could clear the land, we could get it ready, but to me nobody's got the ambition to actually do it. Even to put in a garden, if they were interested in doing that then take a look around, how many people have gardens here? None, well I shouldn't say none a handful and that is it.

Overall, many residents of this community are apprehensive about planting gardens on their reserve because of a perceived connection between the presence of chemical plants, odours and chemical spills, which might affect their land and water. Although there is no conclusive evidence supporting this relationship as yet, community members are relying on their common sense knowledge to conclude that if there are spills, or if they smell odours, the soil and water is not safe to use.

Healing an Unhealthy Land

Some of the participants say that there are spiritual ways to help heal an unhealthy land. They describe particular ceremonies they have used to help ameliorate the effects of

pollution on the water, air and soil. This participant talks about a ceremony that involved the whole community:

Female, Age 42: A lady told the Chief she had a vision or a dream that if we walked around the reserve that would heal things and it would make things better down here. We got everybody together and they did a little ceremony. They got soil from different parts of the reserve and then we did a prayer. We all walked as a group, the whole perimeter of the reserve. I think that was part of our way to get rid of the ethanol, and it worked. Like I said before, we did all kinds of things to do that and we all stuck together.

Female, Age 41: Usually most of the teachings are through prayer. You pray to the Creator. We use tobacco in our prayers. Make an offering to help heal Mother Earth, heal the sky, the ozone layer, and the water. Usually the water is left to the women.

However, others believe that there is little they can do to heal the land, but instead they can 'clear the energy' around the reserve. By clearing the energy around the reserve I believe this participant is referring to the people, their attitudes, and hopes, and is more for awareness than physical change.

Female, Age 43: There are certain things that we do. Not anything that can clean the land itself, but to clean the energy within the area. We use our smudging and our medicines to do that as well as for the water, like praying for the water and offering our tobacco. Just educating people to become more aware about it, and speaking up. That's something that a lot of our people are doing, like the water walks around the great lakes, that's bringing a lot of attention to people. That's something that we hold sacred -, our water because that's our nourishment. That's one way of doing it even though it's not specifically traditional, but it is a way for us to bring notice to the things that are happening.

The residents express that it is difficult to heal the land because of the extent of the damage already caused by contamination. Instead, most of the residents believe that healing the people through awareness in order to help them deal with the reality of the situation is the other alternative.

Male, Age 43: I think that there are spiritual and traditional ways we can help the people, but not the land. I smoked for more than 30 years. It doesn't matter how

well I looked after my body. We can make all the change we want to the land, but it is difficult as long as it keeps dumping down on us.

Living in Chemical Valley

A Place of Employment

Chemical Valley has provided jobs for reserve residents. The close proximity of the industrial plants has a few Aamjiwnaang residents finding work in the 'Valley'. In some cases, residents were given jobs in exchange for their land. Industry needed their land to expand their industry, and aboriginal people needed jobs (RCAP, 1996).

Male, Age 50: My grandfather and father worked there [Chemical Valley] all their lives. You see, that was part of my grandfather's deal when he sold the land; they would give him a job, but the money didn't last long that he got. He went to work for Imperial Oil and he's worked there all the time. Then my dad did the same thing when he was young. He started at Imperial Oil and he worked there until he retired.

Taking a job in Chemical Valley allowed some people to survive, to sustain and provide for themselves. While it was a life-choice, it was made in the absence of many other choices.

Male, Age 62: I found that when I was thirteen years old and my dad died, I couldn't survive here unless I had a job. The jobs were off the reserve so I've always worked off the reserve all my life. Down at Dow Chemical, my goal was to be the best pipe fitter there, and the best welder. When I left there I had 13 certificates, where the average fitter only had about 4. It's [Chemical Valley] been the main livelihood for this area for pretty close to 100 years, and it will probably be the main source for this area for another 100 years.

Although it seems ironic that some community members continue to work for Chemical Valley given the environmental challenges that are facing their community, for some, the bottom line is that they need to live and provide for their families.

Male, Age 62: I could be totally against all industry, but for my livelihood where did I work [insinuating chemical valley]? You have to work, and I know an individual who has a great concern about the environment, yet that is where he works.

Male, Age 43: When the majority of our councilors derive an income from Chemical Valley either by pension or pay, are you going to bite the hand that feeds you?

However, not all the residents are comfortable with working in Chemical Valley. One mother, for example, harbors reservations about having her daughter working in the industrial plants.

Female, Age 42: People will say that you make a lot of money working at the industrial plant, but you're risking your life there too. I don't like my kid working in there. She went walking by some of that deadly stuff, benzene, and I asked her if she had a mask on and she said 'no mom'.

Feelings About Chemical Valley

While some residents benefit from jobs in Chemical Valley, many, nevertheless speak of threats to their health and well-being that are caused by industries. This resident feels that Chemical Valley industries only seek to make money, having little concern for the effects they will have on their environment.

Female, Age 45: I think Chemical Valley is all about money; that is the bottom line, the money that is generated from industry. As much as they try to claim to say they will make sure the environment is protected, I don't think that is their main priority. I think that their main priority is money. The money they'll put out for scholarships, or the money they donate to different charitable organizations, all to make themselves look good, you know, in the eyes of the public... Would people in industry, especially the big shots the CEO's, would they live here?

While this resident understands the reasons why her ancestors surrendered their land as a means to forge a better way of life for their community, she still can't help but express her discontent with the current situation. For this resident and many others, Chemical Valley is destroying their land base, and the health of their peoples, both present and future.

Female, Age 43: I don't like it [Chemical Valley]. I wish they were never here. Even though I know my ancestors were thinking they were doing something good by surrendering that land, it ended up not being so good. Not only did we lose the land, but we lost all the natural resources that were there. Now our generation, past few generations, and the next ones are suffering because of the chemicals that are being produced in this area. It just seems like we're just being overtaken because our community is shrinking, and the more the chemical plants grow and sprout up around us, we're being completely surrounded. They're putting all these pipelines right through our community and who knows how much of that is actually getting into the land itself and the families that are here.

Historically, and still in some respects today, the Aamjiwnaang community depended on the government for their personal, economic and social affairs. Some community members blame the government for the current situation in their community because their ancestors were misinformed or misled about the consequences of surrendering their native land. This was to the detriment of their culture and community.

Female, Age 41: I don't like it. I don't like it at all. I wish a lot of that land wasn't sold. It was just a big money thing and a lot of that land was sold. Native people didn't know what interest was, they had no understanding of what interest was because they couldn't even barely understand English when a lot of the treaties were signed. The ignorance of not knowing what interest was, would benefit the people buying the land because to them we were a bunch of dumb Indians; we didn't know nothing about what was underneath there, and instead of selling it, we could have been leasing it and still producing millions of dollars from it. That's what they're getting, they're getting millions compared to what they gave us, which was pennies back then.

In addition, this resident adds:

Male, Age 43: Chemical Valley is an unnecessary evil. If you go back to the history of how Chemical Valley came to be in Sarnia, and what happened to our reserve, set aside the pollution for a moment, you just hate them for how they dealt with us. So how do I feel about Chemical Valley? Pollution wise, they should be punished to the maximum extent of what's possible, but that never will be. The government refuses to prosecute because the Indian Agents swindled us out of our land.

It is clear that some residents of Aamjiwnaang perceive Chemical Valley as their enemy.

Many of them are of the opinion that Chemical Valley denies the self-worth of Aamjiwnaang people through their aloof reactions and disinterested attitudes towards the deeper implications related to the development goals of Chemical Valley.

Female, Age 41: Suncor wants to put another pipeline through the reserve and they're offering us this chicken feed, which works out to about \$500 a person. You know we're worth more than \$500 a person, what happens if that leaks? What happens if it explodes? Do you know what's going to happen when my great grandchildren are sick from being exposed to whatever's coming out of this ground? There are so many pipelines that go through this ground; I don't know if you realize how many pipes go through here.

Male, Age 51: *They built a fire school billowing black smoke, and it's alright to come and put that on the edge of our First Nation. Now would they go build it by Lambton College or any other place? No, but they bring it down here. It's fine too put industry next to residential areas, people live here! We are a community here long before them, and they just think they can build plants no matter what. Then they say well this is good for the environment. It's good for Canada, fine I realize that, but it's not good for this little community - we live here.*

The residents refer to a breakdown in the communication between industry and Aamjiwnaang to show that Chemical Valley has little regard for them. The residents have raised concerns that they find out about chemical spills long after they occur, or that there is a reluctance to give them information about the levels of contamination on their reserve.

Female, Age 48: *Just walking in and out is a risk around here. We don't know anything until maybe an hour after it's been released, and then our kids have been out there that full hour.*

Female, Age 41: *I would be interested in seeing some readings, like the level of contamination in the creek. We are told it's contaminated, but nobody's ever showed us the scale of contamination. We just know that it says it's contaminated, that's all, that's all we know. What's in it, you know, what's floating around in there? Is it going to cause cancer, can it cause cancer? I think the environment committee should be posting this information.*

Female, Age 42: *More times than not we have to tell industry something's happening, something's wrong. It's never them telling us, it's always us having to tell them 'something's wrong, we can smell this, there's something going all over? I don't think that's fair, I mean they say they're good to us, well I don't know what good they are good for[laughs].*

This resident feels that Aamjiwnaang has been targeted to bear this environmental burden.

He notes that the likelihood of you seeing so much industry in any other residential area is quite slim.

Male, Age 51: *Where else in Ontario do you have residential areas next to heavy industry? That's crazy, they don't do that to any other people. SunOil is right across the road and that is our land; we lost piece of that land. All our land, we lost all use of that land from Sun Oil's and they got it all again.*

Aamjiwnaang residents cannot help but believe that Chemical Valley is a societal ill.

Chemical Valley has disregarded the concerns of their community by continuing to develop

in their area, jeopardizing their health and safety. What is more, Aamjiwnaang residents feel a sense of disrespect and neglect from the larger community.

Perceptions of Exposure

Pollution Awareness

The physical signs of contamination are noticed by most of the residents almost daily. Many of the residents suggest that the presence of contamination can be recognized through the appearance and behaviours of the animals.

Male, Age 48: We were talking about the pollutants in Talfourd Creek. It is so bad that these pollutants don't just stay in the water; they also flow within the soil, flow into the river, and then destroy our fish. There was two-headed snakes found on our territory; there were frogs that were found that were pink; there were pups that were born deformed; and a couple of hunters that follow the Talfourd Creek found dead beavers, dead deer, and other animals. The birds have to bathe in something so they bathe in the creeks. We used to have cranes, blue herrings I believe they were, and they use to come around here, and now you don't see them anymore.

Male, Age 35: Some of the meat has blotchy little bumps that poke out on them [he says this with disgust]. I see something like that at least once a month. When I was checking the beaver den about a month ago, there was a fish coming up the creek, and it didn't have a tail. It just had a little nub. I looked at it and said how does he swim, but it did. It also had little blotches all up its side, it was gross.

Female, Age 48: The rabbits, they got clouds around their eyes and there are bumps on them. They skin the rabbits and leave the meat laying there so the other foxes can eat it. If you ever see a fox down here, they are so skinny. But they eat what they can, because they are hungry.

Abnormalities were noticed on the fish in the creek running through the reserve:

Male, Age 35 Sometimes it's oily or slimy, it looks like shredded wheat [he is referring to the fish]. So I don't eat the big ones, I just eat the little ones.

Female, Age 45: The fish, I don't even know why the heck they fish in there; I wouldn't eat anything out of there. When the water is clear enough you can see the fish in there and they're huge, they're just huge carps. Yeah, those are mutant carp.

The creek itself was described as full of pollutants and toxins.

Male, Age 48: *It's got very high levels of chemicals in there, mercury for one. There are different ones in there. There are very high concentrations of toxic pollutants within Talfourd Creek, and not just on the one side, it's flowing through the whole creek system. You can't just say it stops there, it goes through the whole creek system.*

Female, Age 45: *The Talfourd Creek, it weaves in and off of the reserve. I'm not even quite sure where it starts but I think it starts somewhere off of Scott Road. It weaves through the reserve and then it weaves a bit off the reserve right across the road to where the Dow wetlands are. Then it weaves right through where our Powwow grounds are, and that's where one of the most highly contaminated areas is in the Creek - right where our powwow grounds are in Bear Park.*

Some residents also talked about noticing the effect on the animals when they butcher them.

Male, Age 50: *There have been times we've cleaned deer and the fat was yellow. It was never seen before. They have these little balls in the knee, or in the liver. You can't eat deer of the liver here because of the farms that are spraying their fields with pesticides.*

Differences are noted in taste between the fish caught on the reserve, and the fish caught off the reserve.

Female, Age 51: *We eat the pickerel caught out here, but you can taste the mercury in it. If we are uptown and ate some fish, and then you eat down here, there is a difference.*

Visibility of Exposure and Corresponding Behaviours

The visibility of exposure plays a part in knowing and recognizing that one might be in danger. When exposure is not visible, one might still be in danger and have no way of knowing.

Female, Age 41: *Maybe if it's a release of something that actually has a smell, that's the only time you can really know. But if it's something you can't see, like the stuff that came out of Imperial Oil that day, when it happened you couldn't smell it and so you didn't know. So people are outside doing their work, and breathing it in.*

At times, residents don't know if there has been a release because it is odourless, tasteless and invisible. The level of fear towards a perceived threat of contamination largely depends on whether the level of contamination is airborne or substantially visible e.g. a fire, or a large cloud of smoke.

Female, Age 43: *That was the scariest one I've ever been in [referring to the tank fire scare]. The other one where we had to go to Lambton College, it was a chemical release so it was in the air. I think it was Benzene and you could smell something in the air. With the tank fire, you could see the fire and that fear was there within me, my kids and everybody else.*

If there is the risk that a chemical release might be detrimental to them and their families, some residents have discussed how they need to take actions into their own hands. To them, industry is either unaware that there has been some sort of release, or they simply do not care.

Female, Age 43: *A lightning bolt hit one of the tanks, and the whole tank was on fire. You could hear it; I heard it go off. I thought "what's that" and I opened the door and you could just see the fire going. I started packing, telling my husband and the kids "come on, get up, the tanks blew up." So we're running around here, going door to door, telling everybody that the tank blew up. They [industry] didn't send a warning out, they didn't say we had to evacuate.*

This resident believes, along with others in the community, that contamination is affecting life on the reserve. This resident believes that there is a connection between his neighbour's dog that drank from the creek, and later giving birth to deformed puppies.

Female, Age 41: *Well, for instance there's a guy that lives back on South Vidal, and his dog drank from the creek and then had puppies that were born deformed.*

Health Perceptions

Defining Health

When the residents were asked 'what does being healthy mean to you?', the responses tended to discuss ideas related to staying in shape, exercising, and taking care of oneself and his/her body. For them, being healthy is not about one thing; it is about maintaining a healthy balance between the mental, physical and spiritual aspects of the mind and body.

Female, Age 43: *To be free of illness and disease; living a healthy lifestyle in all aspects, mentally, physically, and emotionally. I guess looking at your life and your health holistically. If you live a healthy life spiritually, you'll have a clear mind; and if you live a healthy life physically, and exercise and eat properly, you'll be*

physically fit. If you believe in your spirituality and you keep those thoughts, then you'll be healthy emotionally as well.

Male, Age 50: Being able to move without pain. But see my wife and I are getting old and she takes a handful of pills everyday. She is not as good health wise as she used to be. My back is always aching, her back is always aching, my son's back is always aching, I don't know why but for some reason everyone has got a bad back.

Male, Age 62: I think I am still physically fit, and I can still do what these 20 year old and 30 year old guys do. I try to keep myself fit. I got a gym set downstairs, and I just bought some more stuff that I'm going to put out in the garage and start working out there in morning again.

Female, Age 45: A healthy lifestyle is eating proper foods, getting regular exercise, and being active.

Health Concerns

The Aamjiwnaang community members were asked if they harbored any general health concerns. The most pressing concerns tended to be diabetes, asthma, bronchitis and a fear of contracting cancer. It is important to note that although the residents were only asked if they had any health concerns in general, they tended to talk about their health concerns as they related to the presence of chemical plants. Of all the concerns that were presented, cancer appears to be the most frightening and pressing, while the other concerns, equally important within the community, were discussed less. Even in the absence of any concrete evidence linking cancer with the presence of chemical plants, many of the participants believe that there is a connection between cancer and contamination, and in turn believe it to be a major health concern.

Female, Age 43: My grandfather died of leukemia, and we strongly believe that it was because of the chemical plants. Whenever anything happened [for example a spill], he would never leave his home. When they had evacuations and leaks, he wouldn't leave; he stayed in his house.

Female, Age 48: Yeah well cancer is a big scare down here and they say it's in the water. That's what the healer told me, that it's in the water.

Analyzing her situation, this resident hints at the possibility that she incurred cancer because she has lived on the Aamjiwnaang reserve for 15 years. Having no other relatives living on the reserve, no one in her family has cancer, yet she has had two forms of cancer.

Female, Age 48: Well there is nobody in my family who's got cancer, and there are six of us. I am the youngest, and I am the only one that has cancer. I had cervical cancer, when I lived in town and that was maybe fifteen, twenty years ago, and now I've got breast cancer and we've been down here for maybe 15 years. There was no cancer in my family at all.

Respiratory problems are another concern in this community. There is a perceived link between breathing problems and air pollution caused by the chemical plants. Whether this is a psychological or environmental affect, it is simply a reality for many in this community.

Female, Age 45: I think one of the concerns I have here in our community is the respiratory problems. In this kind of weather especially [very humid day] when you have the high smog alerts, you have kids that are becoming more prone to being asthmatic, or having bronchial problems. That's what concerns me, and that is something that I think is directly connected to our environment and what we live around.

This resident believes that her family's asthma is connected to living so close to the chemical plants. She notes that her family feels better when they are away from the reserve.

Female, Age 43: My grandfather had leukemia and my son has asthma. Some of my relatives have asthma as well. When we leave here [the reserve] our asthma doesn't bother us as much as it does when we're here on the reserve.

Female, Age 48: Even my friend from Kettle Point, she'll come here and visit and she starts getting a runny nose and watery eyes, but after she's been here for a while she gets use to it.

The following participant does acknowledge that she is a heavy smoker, but she still believes that the pollution has added to her bronchial health issues.

Female, Age 45: When I was living down here, I was prone to bronchitis and strep throat. I was catching really bad head colds living down here, but since I've been down in Corunna, and I've been down there almost eight years now, I've only suffered from strep throat once. I haven't had bronchitis since I left here, and that's just five minutes down the road.

Some participants linked particular incidents they've experienced in their life to their current health condition. Most of them felt that their asthma was contracted due to a chemical spill.

Female, Age 41: I just don't like being around Chemical Valley because you never know what's going. I developed asthma, and I never had asthma before. I developed it after they had a chemical spill at Imperial Oil. They had a chemical spill there and leaked something into the air. They said it wasn't important and a month after the spill I didn't know what was happening to me and I ended up in a hospital. I couldn't breathe and I was diagnosed with asthma. Every month after that I kept having attack, attack, attack, attack...

Female, Age 41: There are a lot of people that die around here of cancer, heart disease, and there are a lot of people with asthma. I didn't realize how many people got asthma until I got asthma. When I had that going on with me [the asthma] I was working back at a chemical plant. My friend's husband said that he had an asthma attack right after that happened [after the spill], and they were trying to say it shouldn't cause any breathing problems, but it did. She said she knows a few other people that had it too.

Male, Age 51: There are a lot of people here with arthritis. I was talking to my uncle yesterday and he was saying that he read on the National Pollution Registry about sulfuric acid. He says that a lot of that causes arthritis, and we've got a lot people with arthritis probably because of the stuff we are breathing.

Health Concerns of the Community

There are also concerns for the general health of the community. There were particular concerns for particular groups in the community that might be more susceptible to health risks. They believe women, children and elders are most at risk.

Female, Age 41: The children and the elders because they have breathing problems and heart problems. Who knows what it's doing and what it would do to them being outside. I don't think you can say its just kids and the elders; I think it's everybody, even unborn babies. Even women that are pregnant and breathing in the air, who knows what that does to your kids? We have a lot of kids who have ADHD and learning disabilities on this reserve.

Male, Age 50: I notice a lot of the elders are having heart attacks. Who knows what it's from, cancer? I don't know if it is a higher rate here-just on this reserve, or anywhere else. A lot of them are dying from cancer and heart attacks.

Female, Age 43: The elders because they've been here for a long time and they've been more exposed to it. We don't have very many elders left in our community; there are not very many that are, I would say, over 70.

This mother talks about the health effects in relation to her son playing in the creek, and how he may eventually be affected by contamination.

Female, Age 41: My son plays in that creek and if he develops a cancer of some type later in life, he's got to think about himself playing in the creek all his life, and whether the chemicals that are in there have anything to do with it if he gets sick. I can't keep him out of it. If there's nothing for him to do, he's going to do it behind my back anyway. He says "if it was contaminated mom, don't you think the fish and the tadpoles and the crayfish would be floating on the top?" I said, "well you got to think too that animals adjust to their environment so maybe they developed another type of way of fighting whatever it is that's in there".

Referencing to Mackenzie et al.'s (2005) study, this resident asks whether eating potentially contaminated food might have an affect on fertility or sex ratios.

Female, Age 41: Just problems conceiving; there might be something wrong with their ovaries, their uterus, or their reproductive system. I never really heard of too many men having problems reproducing, mostly women. A lot of girls are born instead of boys.

On the other hand, this resident believes that it is difficult to claim that pollution affects people. He believes that there could be multiple causes, and to pinpoint one would be unfair.

Male, Age 62: A neighbour down the road had a garden all his life and he canned his vegetation. He eventually died of cancer but that was related to his job [in industry]. So then again, a lot of the people that are dying with cancer haven't even worked in industry. To me you can't blame industry alone in respect to the cancer that is killing the people today.

Male, Age 62: Yes, a lot of them are getting cancer, diabetes and stuff. The industry may have a part in it, but I blame today's society in respect to all the chemicals that they are putting in the ground for artificial fertilizer, like in the Soya beans, even the beef from the cattle. I don't blame it all on industry, and I think it's got a lot to do with your diet. I can't come right out and say Dow Chemicals or Imperial Oil is totally responsible because it's a combination of things.

Dealing with Health Concerns

In this community, the health of the land is important for maintaining one's personal health as we can see by their concern about picking medicinal plants, planting gardens and hunting wild game.

Male, Age 48: *If the land was healthy, than I believe we all would be healthy. This is very important, it's all about the harmony and the balance of our surroundings. We all depend upon it, we depend on the animals, and we depend on the fish.*

Growing medicines is very important in this community. But when the land is unhealthy, the medicines lose their effects.

Male, Age 50: *Sure, because that [the land] is where we gather the medicines, different things that we need. If there is something wrong with the land and whatever is growing in it, it isn't going have the medicinal purposes it should have. This is all we got; what else are we going to do because like they say, you can't go out into the next bush and say "I am here gathering". We would be trespassing; we are not allowed to do that.*

This also extends to the general health of the environment surrounding Aamjiwnaang. This resident believes that there is a domino effect across the land, air, soil, water, animals, and humans. If any element is unhealthy, then all the others will be as well.

Female, Age 42: *I worry about the health of the land. Even for me to be digging my hands in the dirt, I might be getting something from doing that. With the Creek that runs through here, well our animals that we live off of are drinking out of there and it might be their only source of cooling off too. The land is very important down here.*

A simple activity such as walking can contribute to maintaining good health; however this participant talks about the inability to even walk around on the reserve.

Male, Age 43: *To go very simple on it, we go to Stoney Point, which is an hour away. Over the course of the last four days I probably walked about twenty miles, and played on the beach and in the water with my nephews and nieces. I don't want to take my son for a walk out there (the Aamjiwnaang reserve) because it stinks. We never ever know when a release is until much after the fact. How can you enjoy yourself? So that is how it has affected our health. Nobody wants to go out and play.*

Overall, the residents believe that being healthy is about maintaining the balance in the body between the mental, physical and spiritual. Based on the responses of most of the residents, this balance is hard to maintain when living in close proximity to the chemical plants.

Cancer, asthma, and bronchitis are amongst the health concerns that many of the residents

raised and believed to be related to the presence of petro-chemical industries and contamination. In order to deal with these health concerns, some of the residents have decided to stop planting gardens and eating off the land in hopes that it might prevent them from getting cancer and/or other ailments.

Loss of Personal Control

Fear and Uncertainty

The residents of Aamjiwnaang express concern over losing personal control over their life when there are mounting insecurities around the effects of contamination and pollution on their health and well-being. This loss of personal control was characterized by fear (the unknown), uncertainty, hopelessness, frustration. The residents routinely mentioned that they feared using the land as their forefathers did for the simple reason that they were uncertain of what could happen.

Female, Age 45: We don't know! The deer are drinking out of the creek, which is contaminated and they're eating the bush. We have no idea what the impact is. I think a lot of it right now is the fear of the unknown and what the impact would be on us.

Male, Age 48: People are scared to take the wild onion, wild carrots, and all the roots because of the pollution. People are scared to go and pick them and eat them.

Female, Age 41: I used to get some medicines from the land, but I don't get medicines from the land anymore. I don't use plantain on my kids or on myself anymore, just because it grows here. You don't know what kind of toxins are coming through especially when something's right at the top level of the soil; it doesn't grow very deep you know. You don't know what kind of chemicals are sitting in it.

Some of the community residents fear for the safety and health of their children. They fear that their children may breathe the toxins from the chemical releases unknowingly and to the detriment of their health.

Female, Age 48: *Just walking in and out is a risk around here. We don't know anything until maybe an hour after it has been released, and then our kids have been out there that full hour.*

More pressing is the fear of not being around your family when there is an evacuation.

Male, Age 51: *If I go away on council visits or something, I think well something could happen and they don't have a car [‘they’, pointing and referring to his wife and kids]. She doesn't drive, and my grandson is nine, so you kind of worry when you're away. You're living in a time when potentially anything can happen. I think it is always in the back of your mind with anything man-mad. I'm just fearful that something here one day is going to happen and kill a good portion of people.*

Male, Age 50: *We had an evacuation and had to leave. One time, we were coming home and they wouldn't let us on the reserve because they were evacuating. I said “we got kids over there and they don't know what's going on”. They then let us come and grab the kids and we left. But once you get out to the corner of the street, what do we do, where do we go?*

The children are affected psychologically living in a community that is polluted and susceptible to environmental hazards.

Male, Age 51: *The kids they get worried. They get scared sometimes even if the lights go out they wonder what's going on now. I said “well it is just thunderstorms; the lights are bound to go out sometime”.*

This child was too afraid to go to school when she heard the evacuation sirens.

Female, Age 42: *My daughter said, “oh my god can you hear that siren?” She's paranoid about it. I told her that's only coming from over there. She said “but it's coming from the chemical plant over there”. Then I said “they have testings every Monday”, and then she says, ‘did you hear that?’ She stayed home from school because she said the “siren is going off”.*

Related to harboring fears because of a lack of certainty in one's life, the residents discussed how they deal with not knowing what could happen at any given moment.

Male, Age 43: *People are afraid of getting affected. We can go outside and play catch or football, or just sit out on the lawn and have a cup of coffee and 99.9% of the time you're safe. But, one of those times you are going to be sitting out there and not even know what is going on and you'll turn on the news later that evening, or the next morning to find out that substance 'A' had leaked. There are no warnings signs, there is no warning.*

Mourning the Loss of the Past and Resignation

Living in a community surrounded by chemical plants, these residents have lamented the past, feeling despondent about the future of their land and reserve.

Male, Age 62: I don't think you'll ever get to the point of 100% total environmental free incidents because to me it is man-made, which means something is going to break. This is not to the extent that the safety precautions that they have today isn't going to affect the surrounding communities it may have affected 20 years ago.

Even in the face of all the information and ways to reduce the occurrence of chemical spills, this resident still feels that the omnipresence of contamination makes it difficult to escape.

Female, Age 45: Sitting on the Environment committee I try to stay optimistic and positive, but it's hard when all the information that you are given and told about what is here on our reserve. You know they talk about cleanups and cleaning up the creek, but that's going to cost millions and millions of dollars to do that. It's just going to keep coming back and keep accumulating [contamination] especially when you have stuff like heavy metals. It will be here for the rest of our lives; it's not going away and how can you possibly, over such a large span of what we have here, clean all of that up?

This resident believes that breaking down any barrier(s) that are facing this community still places them one step behind.

Male, Age 62: We spoke against the ethanol plant being built here but that only meant it would be built 4 miles down the road. They are building it there and now they are going to be building about three more in the surrounding communities here. So you know even though you may have won the battle here, you lost the fight in the other way because it is just down the road and the fumes are going to come back here anyways. To me, you may have won, but you are two steps back.

Frustration and Anger

Being frustrated with the entire situation, this female resident believes that everything has been taken from her and her community, reliving what was done to aboriginal people in the past.

Female, Age 42: Well it's pissing me right off because I mean that's what Natives are and do. We fish, we hunt, and now you're telling us we can't hunt, we can't fish, or we can't eat it. They are taking away from us once again. Your taking away what our treaty rights allow us to do.

This male resident utters the same frustration, and adds that taking this part of culture away from them is not only detrimental to their sense of self as a community, but will also affect their peoples' ability to survive and sustain themselves.

Male, Age 51: It's the way we were brought up eating that food, so why would we want to stop eating it; it's just part of us. Why should we give up our way of life to somebody for nothing we did. There's a lot of people who depend on that. I mean there are some people that hunt that are on social assistance and they need that extra to get by. Instead of buying expensive meat, a lot of them are on social assistance, and need that to survive.

Following frustration is anger. Implicit in most of the responses from the residents was anger and distrust. This resident takes it one step further by discussing the consequences of this anger. He believes that when people become angry they begin to distrust each other which creates a social distancing in the community.

Male, Age 48: Pollution always affects people in a negative way because it is a negative thing that happens. You have people that are affected by pollution so they are going to feel angry. When they feel angry they distance themselves from other people because that's what sickness does, it distances people and in the process you don't have that spirit within the community anymore.

Chapter Summary

Grounded within the folk domain, the residents of the Aamjiwnaang First Nation possess a strong appreciation for the Mother Earth based on their spiritual teachings. The concept of land described by Chief Edmund Metatawabin cited in RCAP (1996) was evident in the residents' discussions about their connection to the land. The folk domain directs us to the understanding that the land is their provider; and in order to continue this connection with the land, the residents feel the need to safeguard Mother Earth from any destructive forces of contamination. Not only is the land their provider, but it is also expressed as their home. It is not only a place where they live, but a place where they forge relationships with friends, create families, and keep the memory of their forefathers.

When the residents discussed how aboriginal people understand the land in comparison to outsiders or non-aboriginals, as was discussed in Chapter 2, the folk domain was evident. For them, non-aboriginal people lack the respect and appreciation for Mother Earth because they do not understand the spiritual and traditional affinity between aboriginal people and their environment. Moreover, some residents extend this concern to aboriginal people who are disconnected from the land because of disinterest or lack of awareness of their traditional teachings.

Understanding exposure to contamination, and perceptions of health were often dealt within the popular domain. Here the residents reflected on and assessed their experiences through their common-sense beliefs about contamination, and modified their behaviours in line with their belief systems. The residents were mainly concerned about the physical, cultural and social elements of the self.

Feelings about Chemical Valley as a place of employment for some of the residents was understood within the popular domain. Referencing Vaughan's (1993) discussion on the broader economic context of exposure lends support to why some residents continue work at Chemical Valley. Those residents who continue to work in Chemical Valley couched their decision to do so as rooted in an obligation to provide for their families rather than free choice. Because working in the 'valley' was more of an obligation, most of the same residents that worked in the chemical plants still regarded Chemical Valley as a societal ill, having little concern for human life.

Similar to Van Oostdam et al.'s (1999) assertion that aboriginal communities exhibited anxiety and uncertainty about contaminants because they lacked straightforward and credible information, many of Aamjiwnaang residents distrust industry, especially when industry falters in presenting them with needed information regarding chemical spills, and

the levels of contamination on their reserve. Unable to rely on industry professionals to provide needed information (professional domain), the residents who have lived with the reality of contamination on the reserve have developed a knowledge of their own to recognize contamination on their land.

Visible exposure to contamination was assessed based on their common sense knowledge of the physical appearances of animals, the quality of the water, and odours in the air. Once these assessments were made, the residents tended to modify their behaviour. Theorists like Baird, 1986; Brody, 1988; Litai, Lanning & Rasmussen, 1983; Slovic, 1987 cited in Vaughan, 1993, assert that enduring and repeated exposure will result in greater risk judgment(s) when it is felt that one has little control over the health effects. This provides some reasoning behind why some Aamjiwnaang residents chose not to garden. Gardening, once a common activity, was now feared when having knowledge that the soil and water could be contaminated with toxins that are detrimental to one's health. Response to this was to abstain from planting a garden; however, the residents mentioned the conflict over such a decision in discussing how they are now unable to pass this lifestyle to their children.

In looking at how the residents perceived health, there were a few intersections between the popular and folk domains. Many of the residents remarked that being healthy consists of eating healthy and maintaining a balance within the mind, body and soul. However, they often felt conflicted in trying to maintain this balance when their health concerns were generally a result of the contamination. Cajete (1994) and Van Oostdam et al. (1999) remarked that aboriginal identity and spirituality is maintained by their 'place' – food, culture and land. But the participants spoke about how trying to continue their traditional way of life to maintain their health is often difficult. For example, picking medicinal plants would help them prevent disease and sickness, but because the land is no

longer healthy, it would be unable to provide them with the nourishment to keep them well. Response to this dilemma has resulted in some feeling a loss of personal control over their lives and the health of the community because they are uncertain about their future.

Chapter 7

Responses to Health Threats

This chapter has two sections. The first (Disruptions to a Way of Life) deals with how the Aamjiwnaang way of life has changed as a result of contamination plaguing their community. Because Aboriginal people rely on their traditions in guiding their actions and behaviours, the discussions and interpretations in this chapter are intertwined within both the folk and popular arenas. The Aamjiwnaang residents appeal to the folk arena in understanding their historical relationship with the land - how their life has changed over time, and the implications these changes have had on their way of life and sense of identity. The popular domain is identified when the residents are faced with making decisions about their life and health affected by contamination, which will affect them economically, socially and physically.

In the second section (Coping with Exposure), using both the popular and professional domains, this community has had to find ways to deal with the pressures of living in a community where their health is in jeopardy on a daily basis. In this chapter, we also see how the community members have used different coping strategies to contend with this reality. Generally engaged within the popular domain, coping in this community ranges from performing particular tasks, for example shutting their windows and doors under the advice of professionals, not going outside, or simply denying that the problem exists.

Disruptions to a Way of Life

Children Playing & Learning

When the residents were asked how their way of life has been affected, many of them spoke about their children not being able to 'be kids'. They do not play outside as much anymore, and if they do, they are restricted to certain areas on the reserve e.g. their front yard. Many parents talked about when they were children, they played in the bush and by the water, but they are afraid to let their kids do the same.

Male, Age 50: The kids don't play like when we were kids. We used to play right out in the bush; we'd be making forts and whatever. The kids don't go out into the bush areas. They stay in the yard; they won't even go on the road because there's traffic.

Female, Age 41: My kid ended up with red itchy eyes because he plays everyday in the bush in the back of my house. My son plays at the creek and he comes back rubbing his eyes. We're trying to tell him not to play in the bush, but it's like talking to a brick wall [laughs] he is going to go and do it anyway. He grew up in that creek, you know, catching tadpoles, frogs, crayfish, anything you name it.

When the parents harbor such fears of playing outside, they transfer them to their children. The children are instilled with fearing their environment at a young age. They now worry about what could happen to them if they play outside, growing up with insecurities about water, plants, fish etc.

Male, Age 43: We have part of the creek right in front of us here [in front of the house] and my wife and I and the neighbours will yell 'get the hell out of the creek'. Now they are going to pass that phobia onto their kids whether the creek has been healed or not. We are telling them to be afraid of water, something that our body needs to survive. Be afraid of it.

Male, Age 50: They know better than to go play in the ditch. They've already been told, don't go near the ditches, you don't know what's in it. Stay away from the chemicals; don't ever go near the fences, and stay away from them. I tell my son, "if you see anything that you don't think is right, stay away from it, don't go back in that area again".

Female, Age 43: Like I said about the fishing and hunting, there's not much of that going on. My kids, when they were younger, they used to go in the bush all the time and they would go hunting, but they don't really do that anymore; plus they're older. But they used to go fishing all the time and now we don't want to eat the fish. They

used to go swim in the pond back there, but there's signs posted saying 'not to go in there' because of the benzene that leaked in there.

The children learn through oral history, and by connecting with the land. However these teachings have become limited because of the inability to take the children near the ponds and creeks. One resident talks about how the daycare used to take the children out into the environment as part of their educational awareness, and to teach them about their land and culture. These activities no longer take place.

Female, Age 42: The daycare staff took the kids back there [creek] to show them what's in the water. That's where they'd go collect the tadpoles and go back to look at them growing their legs. Now they can't do that, they don't take our kids near there.

This participant expressed remorse in having taken children to the ponds before knowing they were contaminated.

Female, Age 43: I used work at the daycare here and I used to take the kids down for walks there [pond] all the time. We would walk down in the creek when it was drying up and we would collect all those little shells, oyster shells, and collect different stuff at the bottom of the creek. Now that I've found out what's in there I feel really guilty that we did that because I put the children in harm. What I thought I was doing was teaching them about Mother Nature and the things that are out there that they should be learning to respect. To find out now that I could have put them in harm, it really bothers me and upsets me that I didn't know. I wonder now, how it's going to affect them because of all the mercury that was in there, and are they going to be able to be fathers?

Food Acquisition and Consumption: The Uncertainties

Aboriginal peoples live off the land. They thank the Creator for the animals on the land, and then consume them as part of their daily diet (Friesen, 1997). However, the residents today are eating less of the wild game from the reserve because of the fear of not knowing the state of health of the game. There is a degree of uncertainty around whether one should hunt and consume the foods.

Male, Age 51: Nobody eats the fish I wouldn't think because they'd be unhealthy fish since it's not a natural flowing water, its stagnant water. I don't know if you've ever seen it. There is concern about eating the rabbits; I think that's probably one of

the main ones they eat, besides deer. I don't know if anybody eats the raccoons yet, but they used too. I think most wild game that they probably are concerned with is rabbits and venison. I think I'd be washing my food out if there was a garden around here anyway.

The reserve is home to the animals as well, and according to this participant the animals are much like the residents, they do not want to leave. However, they too become subject to the affects of the pollution as they live off the land.

Male, Age 51: My uncle told me that when the deer are born here they don't leave and go live 10 miles away, they don't want to. They stay in the area where they are born, which means the deer are drinking the water out of this creek day in and day out their entire life. So now how is that affecting them, and then how is it coming back to us when we eat that venison year after year? There is an effect.

Female, Age 41: No I wouldn't eat the deer, not from around here because they're eating the stuff that grows out of the ground. They are in these bushes, and they eat the plants that grow from these farmers. I wouldn't eat the deer here.

There remains a few traditional hunters and gatherers in the community. They express that they hunt for a living, and continue to do so in order to provide their families and the larger community. Uncertain about the health of the wild game they catch, this man maintains that there is little they can do about it because they are unable to hunt in other areas.

Male Age 50: This family for instance, hunts and fish for a living, plus we are feeding other people that come over and get it. We don't know if there is any harm from what we live on. We can't go off the reserve and hunt because we're allowed to take 4 deer in a day, off reserve you are only allowed one. Here we can take as many as we want, or as many as we can use.

He further notes that to not hunt or eat traditional foods is not an option. He states that he will just find somewhere else to do it.

Male Age 50: Well if I can't hunt here, then I will go somewhere else. If I got to do it illegally, then we will do it illegally.

Moreover, due to the precarious nature of the health of the wild game, some of the residents are unable to sustain themselves by selling the wild game to the larger community.

Male, Age 48: Now on this territory here, I will not pick any of the herbs, roots or any kind of medicines. I will not use them; and the people won't as well because they

know that I am picking these medicines. They ask me if I pick them up from Sarnia, and if I say yes they won't use it. They're scared. They know about this territory too, so they won't use it, they'll say well they use medicine from somewhere else.

Male, Age 51: My uncle couldn't even sell it [the venison]. He used to sell roast to people just to make a little bit of money for himself. I'd buy two or three roasts off him all the time, but this year he had a few deer, and he couldn't sell it or give it away because everybody is scared. Once they get the test results, maybe some people won't even eat it no more.

Some have found that they now need to buy foods from grocery stores. Commercial foods do not provide the same nutrients and dietary essentials as aboriginal traditional foods (Ship, 1997). A hunter in the community believes that switching to food bought in the store does not mean that it is healthier since much grocery store meats are chemically treated. In addition, you can't buy traditional foods in the grocery store.

Male, Age 50: The grocery store is expensive, really expensive [his wife says in the background]. You can't buy a deer steak in the grocery store; you can't buy a possum shank in the grocery store. All your foods in the grocery store are chemically treated anyway, so you are going to get the chemicals whether you like it or not.

Male, Age 48: We can't hunt and fish; and we can't eat what we hunt and fish anymore. Rarely, people will eat some of the meat, but not like it was before. Now they eat from grocery stores.

Changing from eating traditional food to grocery store produce is affecting their diet as further illustrated by this community member.

Male, Age 48: Just recently a doctor told me I am getting high cholesterol, and I would say that it is from the foods from the grocery stores. The food that we used to eat and that our ancestors used to eat long time ago did not have high cholesterol. Diabetes, heart conditions, cancers, we never had them. I believe personally that some of them come from those foods with chemicals that are in it to preserve it.

With the high rate of diabetes in aboriginal communities, it appears that the presence of the industry exacerbates the problem by negating their traditional lifestyles e.g. no longer able to consume low carbohydrate and low cholesterol foods, while getting routine exercise by participating in traditional hunting and gathering activities.

Female, Age 43: *They're becoming lazy and they don't go out and hunt and fish anymore. They're just going to the store and buying whatever contains a lot of sugar and by-products; you don't know what's in there.*

Female, Age 45: *Diabetes is probably another concern, type 2 diabetes. Because of the inactivity in people while not eating properly; this is something that can be prevented. I think a lot of overweight people, obese people who could stand to lose some weight are just not active. With all the new technology now, it is just causing all the problems that come with being obese, and also a lot of the anti-social problems that are out there.*

Female, Age 41: *We lived off the buffalo; buffalo was our number one food source, and it was our source for everything - our clothing, our housing, our food, our utensils; we used everything even the brain. Then ever since we weren't allowed to eat the buffalo anymore, and introduced to a different way of living, the next thing you know the chemicals came around. Just a different lifestyle all together has altered the health of Native people forever. The amount of diabetes in native communities is outrageous and it's because they can't live their traditional lifestyle of eating and being taught to eat a different way.*

Residents are aware of the effects of these dietary changes as evidenced in this resident's belief that if they resort back to eating traditional foods, diabetes might not be as prominent.

Female, Age 43: *People who are diabetic, what they've been finding out lately is that if they go back to the way that we ate traditionally, eating our traditional foods like wild rice, meat, fish, and berries, they're able to beat the diabetes. Seeing that they can't really eat the fish and the wild meat, and there's not very many berries growing around here, this would affect them being able to beat that stuff, and that's one of the things from our teachings that tell us why so many of our First Nations people are becoming diabetic because we're eating foods that weren't traditionally ours.*

Assessing/Rationalizing Health Behaviours

The residents of Aamjiwnaang explain their decisions to hunt and consume the wild game from varying points of view. The hunters relied on their knowledge and ability to recognize unhealthy wild game. Others made decisions based on the physical appearance of the game, or the locality in which the game was caught. This hunter believes that it is still okay to eat the animals because the liver filters all the toxins.

Male, Age 50: *Oh yeah, there are people that won't touch the venison because of the chemicals in the creek. They figure the deer are going down there to drink the*

water, but it all stays in the liver so I think it is alright. The liver filters all that, so as long as you don't eat the liver, you should be alright, I hope.

He further believes that the animals are smart enough to know not to drink from the waters on the reserve.

Male, Age 50: Well, I don't know if it is that the animals know not to stay away from what might hurt them on the land, but I think they do. If they are drinking something that doesn't taste right, I don't think they drink it. The ducks and the geese they don't land back there no more, so they must know something is wrong.

As Burger et al.'s (1999) study revealed that participants continued to eat fish when they were presented with information advising against it, this female resident's belief parallels Burger et al.'s findings. This participant says that she would not eat from the river but would rather eat the fish from the lake even in the face of knowing that there is mercury in the lake.

Female, Age 45: You could taste the oil in the fish, or occasionally you've heard rumours of people catching fish with tumours on them. So no, I wouldn't do this [eat from the river] I wouldn't go in the river. I wouldn't eat anything out of it. The only fish I'll eat is from the lake, and even then they say that the lake has got mercury in it.

Residents used their local knowledge to challenge the professional domain. For example, this resident is concerned with the laboratory testing done on the animals since it did not include testing of the liver.

Male, Age 51: I ate venison every year until last year when they said to stay away from it because we don't know the test results. I guess they got the meat tested and I asked the guy 'did you check the liver' and he said oh no, he checked the lump, a piece of meat off the lump. Why wouldn't he check the liver, that's the cleaning part of the body? It only seems logical to check the liver.

Explaining why he eats the pickerel from the river and not the animals, this participant commented that the pickerel only pass through the river, therefore having little vulnerability to the contamination.

Female, Age 41: I'd love to eat a rabbit, but not from around here...I mean people say why do you eat the fish then? Well the fish aren't living in the river, they're only

coming from one place to another to swim up and then out the lake. Well they eat the minnows that live in the river, but I don't eat a lot of them. By the time you catch that fish it's probably only eaten 6 or 7 minnows; they don't constantly sit there in the river. So by the time you catch it, if it's eaten a minnow, it probably hasn't gone through their system. I don't have too much concern for the contamination of the pickerel. The deer are always around here. They are always hanging around and eating...getting their food from the land. It's a totally different thing.

This participant reflects on her eating habits from the past, and mentions that she never thought of the impact it might have on her health.

Female, Age 45: We used to always have deer meat when we were kids and a lot of it was caught from here. But like I said, we never gave it a second thought of what the impact was.

Unsure of whether deformities evident on the fish are related to the pollution in the water, this resident takes no chances.

Female, Age 41: Every once in a while you'll catch one and it's got a big red spot on it. It almost looks like something had attached itself to it, like an eel. You can't always say what it is, but if it's got too many of them, we just throw them back in.

Food and Culture

When this community member was asked "what does it mean to you if you are not able to eat your traditional foods?" he expressed feeling hurt that he and others in his community cannot experience the gifts from the Creator.

Male, Age 48: I think they are heart-broken and it hurts the spirit of them. I have the mind, body, spirit and it affects all three parts of that harmony with Mother Earth to be able to rely upon the Creator. We can't enjoy these things the Creator has given us.

This female community member stated that:

Female, Age 51: I think it would affect them because they would say 'well this is what my ancestors and my grandmother used to do', and we don't eat it now.

These residents have a concern for passing on their traditions to their children. These men lamented the loss of culture for reserve children.

Male, Age 51: Me, it just makes me sad because I'd like to teach my kids how to do it. They are not there [the animals] to show them, so I can't.

Male, Age 43: *That whole aspect of the culture is gone here. So because of that we've developed a dependency on Nectles, IGA or Zehrs. I mean we have kids here who will never understand skinning a deer. It's the time together, and the way we use to go out and pick berries and the girls would hang around with the women and they learn the stories. They would learn how to do this by watching them [the women], before you know it you are doing the same thing your mom is doing. That's gone now.*

Section Summary

Drawing on both the folk and popular arenas, the residents discussed how their way of life has changed with the presence of industrial contamination. A central concern was the children. Children are unable to play like children, and learn about their culture and traditions like the older residents did in the past. The older community members have instilled a sense of fear in their children, teaching them to distrust the water and the land, in exact contradiction to their spiritual beliefs.

With traditional foods central to the aboriginal way of life and spiritual being, contamination of the land and environment has presented a challenge to the residents in deciding whether to continue to hunt and consume their traditional foods. Closely related to Hobson's (1992) understanding of traditional knowledge, the residents have tapped into both the popular and folk domains in understanding and reacting to this dilemma, challenging what they are told by those in the professional domain. Those residents who continue to hunt and consume the wild game tend to over-estimate their ability to detect contamination as was found by Weinstein (1982, 1989) and O'Neil et al. (1997). Detection was based on visible, physical abnormalities and behavioural characteristics. Some of the residents believed that the liver would filter out all the toxins; that the animals are smart enough to know not to drink from the river; that it might be better to eat the fish from the lake rather than the river, or that the fish do not stay in the contaminated rivers long enough to ingest

the toxins. Some of the residents used these assessments to explain why they would or would not consume the wild game.

Further to this, some of the residents who rely on hunting and gathering were also influenced by cultural and economic pressures in deciding whether to hunt and gather. Similar to Vaughan's (1993) discussion on the economic pressures that influence risk perception and behaviour, some residents expressed that to stop hunting would disengage them from their land. For them, this could potentially mean that they could lose their mode of subsistence, and run the risk that they are unable to sustain themselves because both the inside and outside communities harbor fears in buying and consuming foods caught on the Aamjiwnaang reserve. Overall, the general response to these situations have meant that many Aamjiwnaang residents have appealed to the professional domain where health advisories and professionals suggest that they not eat traditional foods because of the high risk of getting sick from the toxins within the wild game.

Many of the residents have also moved towards consuming commercial foods to reduce the chance of disease, and allay their anxiety and fears. However, this behavioural response has only created more problems both culturally and physically. As maintained by Wheatley (1993) some of the residents believe that consuming commercial foods adds to their health problems, citing the high rate of diabetes as a result of eating foods high in cholesterol and carbohydrates. Their value system further informs them that traditional foods are more nutritious, less likely to cause sickness and ailments in the body, and form part of their cultural being.

Not being able to consume their traditional foods has had implications for this community. Some of the residents feel that they cannot enjoy the gifts of the Creator, or

pass on their traditions to future generations, traditions which are central to the very essence of being an aboriginal person, as was asserted by Kuhnlein (1995).

Coping with Exposure

Shutting Pollution Out

At night, this resident copes with not knowing what could happen by keeping all her windows closed, even in summer time.

Female, Age 52: At night when you go to sleep, you don't open windows, you have everything shut even your air conditioner, which can bring the air in too.

Interestingly, this resident relies on the old ways of detecting harm once used in the coal mines of the past. She keeps a bird in her home to alert her to harm. If she wakes up one day and sees it dead, she will know something might have been released into the air.

Female, Age 48: That's why I keep the bird around; if there is a spill or something and you see your bird dead, then you know something is up.

Some residents impose regular indoor evacuations on themselves.

Male, Age 50: Well there are days that you don't want to be outside because of the air quality. On a North wind you are getting all the chemicals, or smells coming through the reserve and it's not that they are polluting, it's just they are bad smells. On a North Wind you don't want to be outside working on your car.

Others who have respiratory problems, stay indoors to avoid attacks.

Male, Age 51: I stay in here [referring to his house, laughing]. Out of the last 2 or 3 days, we've been in the house, with the air turned on. I don't go out, not when it's like that. You know the smog stays down, and with all the heat here you don't really want to be out there cutting the grass. I think that's the way a lot of the people deal with it, to stay indoors when the smog is here.

Evacuations: Leaving Polluted Areas

A Community Awareness Emergency Response (CAER) protocol has been adopted in this community to help evacuate residents in the event of a severe chemical spill or other accident that presents an acute threat to life and health. Although there is still some debate

over which spills and accidents warrant a community evacuation response, all of the residents have experienced at least one evacuation over the course of their residency on the reserve. Some residents have evacuated 6 times or more, largely depending on how long they lived on the reserve. Indoor evacuations are common with several occurring in some weeks. When there is an indoor evacuation, the residents are told to go into their homes and close all doors and windows. Indoor evacuations or remaining inside with all doors and windows shut is the most common protection against air borne toxins.

Male, Age 50: You have to go inside because you can't stand the smell. There are things that happen here where the paint is peeling off the house. Literally, the paint was peeling off the house. I always say close your windows, don't go outside. You can't go outside because of the smell. Whatever is leaking it's killing trees. The trees are bare of leaves after this thing's [the chemical release] gone through.

Female, Age 42: We've had a lot of indoor ones [evacuations] where we just go in, and shut your air conditioner and any exhaust from outside. I didn't know that you're supposed to put wet cloths in front of the doors.

Putting cloth under your door was followed by many when a home on reserve suffered by inhaling toxins that were released into the air. This lady briefly recounts the story:

Female, Age 42: This lady said she lived along the river and you could see the smoke coming. They had all the windows shut, but it was seeping right through windows anyways, and then they were all sick.

Outdoor evacuations are in response to more severe chemical spills. They are usually performed when there is extreme concern over the safety of the people, and potentially more serious health consequences.

Male, Age 48: There were so many leaks, gas leaks and everything. Ideally we are supposed to be evacuated every time there is a strong odour or smell that may be harmful to us. Then they'll call the Chief and Council and tell us, "no its okay it's contained, just tell them to shut their windows and put towels under their doors".

Several methods have been tested to alert residents to evacuate. Some of the community members referred to the telephone chain that is used to make the notification of evacuations

more systematic. Designated people are responsible for calling and notifying other homes.

Another method was to have people going door-to-door to let them know to evacuate.

Male, Age 43: *We've tried other things; a phone communication system that was filtered through the phone line and it was a series of beeps and a text message. Simple things like you take this part of Tashmoo, I'll take this part of Tashmoo, but none of them ever worked because Chemical companies won't initiate.*

However, there is still concern that the systems are not adequate.

Female, Age 51: *I think on the reserve there should be an Emergency Coordinator; somebody that is the contact person for Shell, Dow or Imperial Oil so then they would notify whoever and call on the system.*

Currently, the residents know when to evacuate when they hear sirens. The siren is loud enough for the whole community to hear, but not all comply with the evacuation alarm.

Many of the residents express that the sirens go off so often that sometimes they lose their effect. This resident wants to know why the siren is sounding.

Female, Age 42: *Well when the sirens go off we don't even know what they are. The siren goes off and everybody just ignores it anyway. Tell us what these sirens mean.*

One resident used humor to respond to the ever-present sirens.

Male, Age 50: *They have so many of the sirens going off, a lot of times it's just on Mondays. On Mondays they are always testing them [the sirens]. You never know if it is a test or a real one because they are testing them all the time. Once in a while it will come on the TV, and I say 'we are getting blown up again' (says with a chuckle).*

Some of the residents ignore the sirens because they feel that they should not be forced to leave their homes. Knowing it is their decision, and knowing the potential consequences of their actions, many believe that if they are to die, they should die on their soil.

Female, Age 41: *There have been times when sirens have gone off and nobody goes anywhere, they just [shrug it off action] just ignore it until somebody knocks on your door. If it's that bad they'll come knocking on the door or they'll call. My grandfather was horrible for evacuations. He was one of those old Indians that said 'this is my house I'm going to stay right here you can't make me leave'. He was a stubborn old guy you couldn't get him to leave for nothing. If you tell him that he might die if he stays here, he says, 'well so he's not leaving'. There are just some*

people who will not leave their home and you can't force them to. If you stay here, 'so be it', he didn't care. Some people will leave some people won't.

Female, Age 45: They just aren't going to be chased out by industry; they refuse to leave and you can't force them too. I know that my ex's parents refused to leave. My ex's mother would just be panicking and she couldn't drive, but her husband refused to leave. He refused to get up during the night when you'd hear the sirens going off and she'd be panicking because there would be toxic fumes or threat of an explosion. He refused to leave. A lot of them are just resigned to the fact of leaving. "This is where we are and if I'm going to die, I'm not leaving". Many of them feel this is their home and their not going to leave it.

Once they are evacuated, the next course of action is not always clear. Some are unsure of where to go and are afraid they might lose their home and personal belongings.

Female, Age 48: The worst is where to know where to go. Everybody is all scared and confused and then they tell you to go here, but you're going outside into the fumes. That is what is iffy. They tell you to turn everything off and then you have to leave your house unattended. You better get to a car and go to where they say they are meeting but everybody is just confused and scared. Then they say to go down to the community centre. You go down there, then they send you out to the college, and then they send you out to a hotel. Like all and all you are still out there, it's scary.

Moving

Another way to cope with the situation is to leave the situation behind and move. When the residents were asked if they would consider moving, many of them said 'yes' for the simple reason that they had concerns for their health. However this option is difficult because of their fondness for Aamjiwnaang, and their history and connection to the land.

Although the large majority of the participants like living on the reserve, many of them did express that they might also consider moving simply because of the close proximity to the chemical plants.

Male, Age 43: Whether or not the reserve moves I have been looking for opportunities back in the North. Not that the North is any safer or any cleaner, there is as much pollution in the far north as there is here because it hits the ozone layer and drops. It is a different kind of pollution; it is not going to kill you, but this will. One bad accident will kill everything, not harm us, but kill us and then you will here about us on CNN. You'll go wow!

Female, Age 41: *I wish that I could move. Yeah, I don't like it here. I just don't like being around the Chemical Valley because of never knowing what's going to happen. I developed asthma and I never ever had asthma before. I developed it after they had a chemical spill at Imperial Oil.*

One participant talks about moving away from the reserve because he feels it might stop some of the illness from occurring.

Male, Age 35: *I heard some people that lived in Sarnia and had breathing problems, moved to British Columbia, in places where there are no chemical plants. Five years after their move, they were fine.*

For those that want to move, financial constraints are a major consideration, making moving an option for some but not for others.

Male, Age 50: *I'm prepared to move anytime, but I like it here. Like I say, I can get up and move anytime I feel like it, whereas other people can't because they are here no matter what. They don't have the money to just get up and leave, they don't have no where to go.*

Male, Age 51: *People are moving, giving up their homes to go elsewhere - the one's with money that can afford it. I can't afford to go no where; I'm a poor guy [he laughs] I'd love to have a million bucks and go buy a new house up by the lake; a nice safe environment. That's the issue here, where the air, the water, the land is safe.*

Moving to a new and better location is a difficult decision. Some fear they might not find a location as good as this one.

Female, Age 42: *If we moved as a family I'd go. There were some that said they wouldn't go, but I would. It would depend on where it is that we go because we are in a perfect location; the rivers, the bush, relatives just down the road and the border.*

For others to consider the option to move, the place would have to have the same attributes as the Aamjiwnaang reserve.

Female, Age 43: *We would have to have a whole community like we do here. We need to be designated as reserve land alongside the water where there's fresh air, trees, fish and wild meat.*

Male Age 48: *If our Chief and Council would say that they could maybe buy some healthy land somewhere that is about the same size as this territory, and relocate*

everybody with economical environmentally positive steps, then I would say yes. Lets move everyone from here.

Leaving the reserve clearly meant leaving family:

Female, Age 51: I wouldn't want to move. I've lived here all my life, I love the river. I just wouldn't want to move but all I would like to see is more monitoring in effect. Who'd want to be relocated; it might be worse where you get relocated to.

Female, Age 42: It'd be hard to leave here; it'd be very hard because of the feelings I have for my family. Not only my brothers, sisters, aunts, uncles, nieces and nephews, I'm talking the whole reserve are my family because I've hung out with all of them, the Plain's, the Joseph's, the William's, the Nahamabin's. I've hung out with them all my life, so they are my family too.

Male, Age 43: I have at least 7 or 8 generations of family here, in the ground and I don't want to lose that. So how do you make somebody understand, what's our connection to here? Our connection is, somebody can sit down with me and say you know your great granddad use to play right over there.

When considering the option of moving, it becomes a difficult decision because their culture and identity might be lost. To move away from where one's roots are ground, and from their connection to their people implies a sense of loss of culture and identity for a couple participants in this community.

Female, Age 45: I've seen it in some of our community members here who left when they were very young. When they came back you can tell that they lost out on their culture. You can tell that there are some who are getting reacquainted with their identity again as Native people when they come back, but there are also those who are not really recognizing that they are Natives or that they have their culture here. They just don't have that connection, they just cannot grasp their connection with their culture.

Female, Age Unknown: In a way it makes me feel glad that people are considering the option of moving; at least they are taking precautions. But yet it makes me sad too that everybody is not coming back to be a full part of the community. We are a big puzzle here, we have a lot of pieces missing and that is what everybody is trying to do when it comes to identity. They are always saying youth are afraid of puzzling their life together or puzzling their family background, and every little bit into that reserve puzzle is being taken away. Slowly I see this reserve is just going to go up in a puff and, everybody will be gone.

Fighting Back

The residents have begun to respond to the contamination that is affecting their reserve.

They have created an Environmental Committee that addresses these issues and liaises with industry and the government in getting their voices and concerns heard.

Male, Age 48: You would have to unite with other environmental committees. We would have to make a coalition of people that care, to be able to stop the industries that are bringing this pollution. You have to stop that first before you can do anything to help clean the land. We need those people who care to unite.

Judging from the following response, one of the concerns is to make the residents more aware about the problem so they can resist them. With raised awareness and knowledge has come several forms of resistance including a road block to protest building of a new ethanol plant.

Female, Age 41: Everybody seems like their more aware of exactly what the chemical valley is trying to do. They were trying to build an ethanol plant so there was a lot of people that came together to stop it. I feel that they are more aware of what's going on. I think there's a lot of people who are afraid of what's going to happen.

Male, Age 43: We are the militants and I personally have been in militant action from North to South, East to West. I was the first person on the road block. There was three of us there, my brother-in-law and my cousin. We didn't let it affect our worth, and I think that is the biggest problem right now because the kids are feeling that.

The first step is educating people about detecting the signs of releases, and knowing when there is a potential threat.

Female, Age 45: After we had the hydrogen sulphide leak from Suncor, one of the things I wanted to do for people was to get some public education. We have so many different odours that come through here and a lot of people are like 'ew that smells funny'. They just don't know what it is. I want to let them know that 'if you smell this, then do this, and get the hell inside'.

Of greater importance would be making the chemical plants accountable for their actions.

Accountability would have to start with the government recognizing that there is a need to

implement policies that might reduce industry's freedom to contaminate and pollute without being held accountable.

Male, Age 43: Ownership to the damage by the federal government. They've allowed it and they won't fix it because of money. Have the federal government own up. They're telling us on a regular basis as part of the environment committee, it's not their responsibility, it's Imperial Oil or SunCor or Shell. They have fiduciary responsibilities to us, your agents allowed this to happen.

Section Summary

Airborne pollution is most immediately evident and visible to the senses through odour, sight and sound (sirens), and therefore easier to respond to as seen through evacuations. However, contamination in the land and water builds up over time and is not always visible. This poses challenges in responding to contamination when detection is low.

The residents of the Aamjiwnaang reserve have had to implement coping mechanisms in dealing with the reality of chronic contamination of their land and water. There is always the possibility that a chemical spill may happen at any moment, creating an acute and immediate threat. These coping mechanisms tend to reside within the popular domain, while at times drawing on the professional domain. Coping also tends to be responded to both personally and at the community level.

Some residents focus on coping with airborne odours, and have mentioned that to help them cope they shut their windows to lock odours out, and safeguard them against any releases that may happen throughout the night. Others have stated that they do not go outdoors as much, and prefer stay inside when there are smog alerts. The community has appealed to both the popular domain in seeking aid when living in an at-risk area, and the professional domain by adopting the Sarnia Community Response Initiative presented by CAER. The discussion in Chapter 2 on interpreting risks informs us as to why some residents comply with prescribed evacuation measures, while others do not e.g. practicing

safe sex versus 'risky' sexual behaviour. Some residents have coped by shutting their windows and staying indoors, but in extreme circumstances where the threat is acute, some have not adhered to the provisions involved in outdoor evacuations. Some residents have refused to leave the reserve because of their firm convictions that reside within their value systems. These residents believe that no one can force them to leave their homes, and if they are meant to die they would rather it be on their land, in their home.

Another way of coping is considering the option to move. While decisions to move were grounded in the popular domain, some residents also drew upon the folk domain. Most of the residents mentioned that they would not want to move from the Aamjiwnaang reserve because it would affect them socially, culturally and even economically, which coincides with Smallface Marule's (1978) statement cited in RCAP (1996) that the distinctiveness of aboriginal people would be lost if we remove them from their land. They expressed that they have established a long standing connection with the land, their family and friends, and to move to another place would disconnect the community, and present them with other economic pressures e.g. losing their tax exemption if they were located off reserve. On the other hand, some mentioned that moving from the reserve would be the best option because it would reduce health risks, and allow them to have a better way of life.

The residents also demonstrated grassroots responses to dealing with the contamination of their land and environment. Some have responded by using modes of resistance against industry, while others have begun to arouse awareness of the issues and risks involved with contamination. Active responses are being taken in the Aamjiwnaang community as they have established an Environmental Committee that addresses issues of pollution and contamination on the reserve, and also liaises with the industrial plants in order to bring needed information to their community.

Chapter 8

Conclusions/Discussion

The health of this population is jeopardized by industrialization; however, it is only recently that researchers, practitioners and some levels of the Canadian government have realized the extent of this problem, not only on the Aamjiwnaang reserve, but elsewhere in Canada. In recent years, studies have been conducted on the effects of contamination in aboriginal communities, recognizing that aboriginal peoples are more at risk to contamination because of their lifestyle; a lifestyle that prides itself on living off the land, and sharing the gifts of the Creator (Health Canada, 1999; Environment Canada, 2005; Wheatley, 1994; Friesen, 1997). In almost every study conducted, the conclusions drawn speak to the fact that with growing industrialization and new technologies, the environment and the human populace are gravely affected. The human population cannot cope in an era where ongoing toxic emissions frequent our airways, contaminate our soils, and pollute our waters; the inescapable consequence is threats to our health. This is especially true for aboriginal populations who rely on the land and environment for their sustenance, spirituality and identity.

This research sought to describe the environmental crisis facing aboriginal peoples on the Aamjiwnaang reserve from their perspective, as well as understand how they interpret health and contamination, and further respond to environmental contamination. The Aamjiwnaang First Nation is a unique reserve. It is more affluent in comparison to most other reserves because it is able to sustain itself economically and financially, largely as a result of Chemical Valley. While this reserve may appear to be prosperous economically, its people face a dilemma in weighing the costs of continuing their economic growth against

the destruction of their land and environment created by the surrounding chemical industries. In speaking with most of the residents in this community about this environmental problem, maintaining the health of the land and the spirit of the people appear to outweigh any economic gain.

In the Aamjiwnaang community, making decisions about their health, weighing the costs of particular behaviours, and looking for alternatives is not always understood or assessed based on the professional domain of reports, advisories or statistics. Most decisions and where people live their lives are found within the popular and folk domains, as discussed by Kleinman. The Aamjiwnaang residents turned to their families, community, connections and obligations, in addition to their indigenous knowledges and value systems when making sense of the world and their decisions. In this community almost all understandings about health and environmental contamination were centered on their connection to the land. In most instances, the residents chose to articulate the folk domain that is, to draw on their traditional or indigenous knowledge in making distinctions, drawing conclusions assessing alternatives, and responding to problems. Most compelling was the fact that the sample was drawn primarily from residents who had access to research and scientific reports, many of which had been commissioned by the Aamjiwnaang Environmental Committee. Despite their knowledge and familiarity with the reports and research, these residents tended to appeal to the folk domain in making their value judgments, decisions, assessments and choices among the alternatives. Even when they are knowledgeable about the issue from a professional perspective, the connection to history, identity and spirituality prevails, and continues to be the force in their thinking and decision making processes.

Oral history, found in the folk domain, played an important role in how the Aamjiwnaang residents viewed and spoke about the land from past to present. Without the stories from their ancestors about how the land has changed over time, e.g. vast land and clean waters to minimal land space and murky waters, the residents might not have been able to describe in detail how the land has changed. Furthermore, the Aamjiwnaang people relied on the stories of their ancestors which were grounded in their appreciation and understanding of how the land and environment had provided for and sustained their families. Couched within the popular domain, this knowledge brought them to an understanding of how important and serious this ecological problem is in their community, which can direct them in their personal responses to this crisis.

We have asked the Aamjiwnaang people to change their traditional lifestyle because of man-made industrial plants that are encroaching on their reserves and manufacturing increased risks to health. To the larger Canadian population, we understand that modern development threatens our health, but in aboriginal communities threats to human health are not the only concern. As discussed by Hobson (1992) and Simpson (2000), the residents emphasized their value systems and cultural orientations towards life (folk domain) in their responses to environmental pollution, making it clearly evident that the concern in this community is not only their health, but also their cultural integrity. However, in balancing their health with their cultural distinctiveness, the Aamjiwnaang residents run the risk of distancing themselves from their social location. Within the popular domain, many of the residents talked about the priority of community, family, and connections. It is here where they discussed their community as 'home', defined their connections, and discussed their obligations to their self.

Cajete (1994) and McNab's (2004) reference to the concept of 'place' was in line with residents' discussions of community, family and home. Aamjiwnaang land is a place to call home, with historical foundations and roots to special and sacred places that define the Aamjiwnaang identity. To move away from these connections would only weaken the Aamjiwnaang self and community. Aamjiwnaang land is where they can continue to appreciate their relationship with the land, environment, and the Creator, enjoying the gifts of life. But, environmental contamination has weakened their cultural and spiritual bond with their land and natural resources.

In the face of environmental risks, the Aamjiwnaang people have had to modify their behaviours to manage their risks to health. They are subsequently reconstructing their identity because they are faced with the task of changing their traditional lifestyles in order to stay healthy. This community has a unique way of life. Some continue, at least in part, to live off the land and the natural resources, and others still use the land to gather some nutrients, help heal their illnesses, and give their children a place to play and 'be kids'. In effect, hunting, gathering, harvesting and consuming traditional food and medicines from the land and water, provides not only their food and income, but also continues passing on the legacy of aboriginal culture to future generations; it is the social, cultural and spiritual base of aboriginal people.

It is a difficult task for the Aamjiwnaang First Nation people to maintain the social, cultural and spiritual fabric of the Aamjiwnaang community when environmental contaminants are disengaging them from the traditional use of the land. Because their teachings, founded in the folk domain instruct them about the importance of the land, the residents have recognized that the loss of land has compromised their ability to carry out their traditional way of life, further disconnecting them from the land and the community as

a whole. Feeling disheartened and lamenting the loss of their past and their cultural heritage, the residents have expressed feelings of anger and distrust of Chemical Valley and the government. Some residents spoke of Chemical Valley as denying them as a people, and felt personally targeted as a group to bare the burden of pollution and contamination. This closely parallels the differential social effects associated with environmental health discussed within theories of environmental racism and classism (Allen, 1995; Bullard, 1996; Denq, 2000; Maher, 1998). Following from this, many of the residents have conveyed their distrust for the government and Chemical Valley representatives because of their disregard for their community and environment, with no provisions of accountability.

Drawing on the popular domain in understanding exposure to contamination, the residents have also recognized through their common-sense perceptions that the air is difficult to breathe, and their waters have become murky, and unsafe to swim and fish in, and as a result, the animals have been affected by the pollution and have either become scarce or non-consummable.

It is a difficult decision to make when considering whether or not one should continue to consume traditional foods. For some it is a straightforward and simple decision, and for others it is much more challenging. Each of the residents perceived the threat differently, and therefore reacted differently. As the literature review suggested, differences in perception were influenced by each resident's individual experience and knowledge e.g. technical information (professional domain) or traditional knowledge (folk domain), comprehension of the threat or risk, personal involvement (popular domain), and availability of alternatives (Burger et al., 1999; O'Neil et al., 1997; Savage, 1992; Van Oostdam et al., 1999; Vaughan and Nordenstam, 1991; Vaughan, 1993). Appealing to the professional domain, some residents have decided to no longer consume traditional foods because of

health advisories advising against it, while others still continue to consume traditional foods because this is what they have always done. To abstain from eating traditional foods that are a defining aspect of aboriginal culture would be to deny their aboriginal identity.

Amidst all these choices, decisions and alternatives, the Aamjiwnaang residents have also had to find ways to cope with the different internal (perceptions of severity, susceptibility and vulnerability) and external (technological, cultural, and historical) pressures impacting on them. Coping techniques such as staying indoors, refraining from going in the bush or water are some of the ways the residents have coped. In more serious cases, where the threats to personal health are more severe or acute, some residents have had to evacuate and leave their reserve (sometimes long after the threat has materialized) with the uncertainty of what will happen next, what will happen to their home and their land. In addition to these ways of coping some residents talked about leaving the entire situation behind them and moving to another place. However, a new area or different land would have to mimic the same characteristics of the Aamjiwnaang reserve in order for these residents to consider this option or feel at 'home' in the new place.

The underlying theme throughout this research, clearly illuminated through Kleinman's ecological model, is that with all these life-experiences, the Aamjiwnaang culture and sense of self have been dramatically affected. This cuts across land use to food acquisition to coping mechanisms. The following quote talks about how the loss of use of the land has affected their sense of identity, culture and future generations. This resident finds that the people in the community who accept things the way they are lack an appreciation for their earth and future generations.

Female, Age 43: Some people have accepted the fact that this is how it is and they'll just settle for what's here instead of trying to do what's best for those next ones that are coming behind us. Like I said, a lot of people in our community don't think along our traditional, original ways of life. They just accept what's here and worry about

the money. They don't appreciate or respect the earth, the water or the air. Those are the ones who are more into materialistic things than who they are; who we are as people.

Some of residents in the Aamjiwnaang community have found ways to fight back against all the pollution that has enveloped their reserve. Many of these residents have channeled their anger and frustration into creating grassroots community responses to voice their concerns about the destruction to their land and environment. It is clear that this community has not been passive throughout this ordeal. Bringing together the community alongside researchers and the media, this community has begun to apply public pressure to Chemical Valley, and has aroused public concern, support and awareness through reports, articles and media coverage, both locally and worldwide.

The pressing question is what next steps should be taken based on what has been learned from this research. Building the cultural morale of the Aamjiwnaang Nation and instilling a sense of hope for a better future for their families and children appear to be two concerns that stand out from this work. This can only be achieved if this community continues to be informed about the possible health effects to their land and people, and government officials, researchers and the like recognize the reality of contamination and pollution of affecting this reserve. "Band-aiding" the problem with evacuations and health advisories cannot be the only resolution. More grassroots involvement, cultural awareness and stricter environmental controls need to be enforced at the legislative level in order for changes to begin.

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APPENDIX A

Interview Questions-Final Set of Questions

1. Background

- Were you born here?
- Have you always lived here? If not, when did you move here?
- Do you have family members living here? Where is your family from?

2. Understanding the Land

- Could you describe your relationship with the land?
- Have your ancestors lived here?
- What stories have they told you about this place?
- What do you like about living here?
- Are there special/sacred places that are important to Aamjiwnaang? What makes them special?
- Do you think that the way Aamjiwnaang residents view the land is different than the way non-Aboriginal people view the land?
- Where do you feel your strongest connection to the land? Why do you go there?
- Could you describe your relationship with the Land (Mother Earth)?
- Do you participate in ceremonies? Why are they important?
- Are there specific ceremonies that involve the land?

3. Understanding Health

- Do you have any health concerns?
- Is there anything that you do to deal with your health concerns?
- What does health mean to you?
- Is the health of the land important for maintaining personal health?

4. Contamination and Health Concerns

- How do you feel about the Chemical Valley?
- Has it affected the way of life in the community?
- Do you have any concerns about the chemical plants in the area?
- Do you have any concerns about the health impacts of these plants on the community/family/yourself?
- Would you attribute any family/personal health concerns to the chemical plants?
- Are there members in the community that you think may be most at risk?
- How do you think others outside of this community would view the health of the land here?
- Are there tradition/spiritual ways to heal an unhealthy environment/land?

- Are there ways that Aamjiwnaang residents would view contaminated land that would be different from non-Aboriginal people?
- How do you feel about the quality of the water in Talfourd Creek?
- How has this affected the health of the soil/plants/animals/people in the community?
- Is the air/water important to understanding your relationship with Mother Earth?

5. Environmental Contamination and Concerns about Food

- Do you have any concerns about the relationship between environmental contamination and the food supplies in general? Are there any specific concerns in the Reserve?
- Could you describe if there have been any changes in the types of food consumption patterns of the Amjiwnaang people? Are people moving away from eating their traditional foods to something else? If the people are unable to eat traditional foods, what does this mean to them? Health? Or otherwise e.g., alternatives to traditional foods and what are the problems associated with adjustments?
- What would you like to see to improve the situation in the reserve?

VITA AUCTORIS

Kizzy Bedeau was born in 1978 in Huddersfield, England. She graduated from Cedarbrae Collegiate Institute in 1997. From there she went on to York University where she obtained an Honours B.A. in Sociology and Law and Society, and later completed the Law Clerk Certificate program at Centennial College. She has completed the Master's degree program in Sociology at the University of Windsor and hopes to graduate in June 2006.