

# 'Contaminated' Therapeutic Landscape: The Case of the Aamjiwnaang First Nation in Ontario, Canada

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*This study examines the impact of Sarnia's 'Chemical Valley' in Ontario, Canada, on the health and well-being of residents in Aamjiwnaang First Nation (pop=850). Qualitative in-depth interviews were conducted with residents (n=18) to explore how the complex connection between Aamjiwnaang First Nation residents and Mother Earth, may be changing due to environmental contamination. The results suggest that residents have increasingly heightened concerns that 'Mother Earth is sick' due to chronic contamination. While residents' perceptions of the therapeutic nature of Mother Earth remain strong, the ability to relate to Mother Earth in this contaminated landscape is changing with several consequences. In search of health and well-being, Aamjiwnaang residents are now engaged in what we refer to as therapeutic selectivity within a contaminated landscape. The findings call for policy intervention including the establishment of an indoor recreational facility where both children and adults can go for recreation, and for the cleaning of contamination from Talfourd Creek within the community.*

**Keywords:** *Aamjiwnaang First Nation, Therapeutic landscapes, Environmental Contamination, Mother Earth.*

Within First Nations'<sup>1</sup> culture there indeed exists a deep respect for the land in which the individual, family, and community are inter-related. The land is a fundamental component of Indigenous culture, and the health of the land and the health of the community are thought to be synonymous (Richmond and Ross, 2009; Brightman, 1993), nurtured through relationships to the physical environment and the cultural, spiritual, economic, political and social roots it provides (Canada, 1996). Many First Nation people believe the land belongs to the past, the present, and the future, and is to be shared by the animals, plants, sky, water and spiritual beings, hence, they refer to land as 'Mother Earth' (Wilson and Peters, 2005; Hudson-Rodd, 1998; Weaver, 1996). Through this relationship with Mother Earth, the health of the land is seen as vital to harmonizing an individual's health (Smith, 2006; Wilson, 2003; Wilson and Rosenberg, 2002; Weaver, 1996). This conception of land persists today

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in First Nation communities (Richmond and Ross, 2009; Laduke, 1999); however this intimate connection may be changing as a result of chronic environmental contamination and devastation (Warry, 2000; Laduke, 1999; Wheatley, 1997).

First Nations lands are facing massive environmental devastation with contamination from chemicals such as PCB's and DDT from years of development and resource exploitation (Weaver, 1996). It is estimated that 70 percent of the world's uranium originated from Native communities (Laduke, 1999). Furthermore, the mercury poisoning in the communities of the Ojibwa of Grassy Narrows and WhiteDog reserves in Northwest Ontario provides a prominent example (Erikson, 1994). Grassy Narrows residents were exposed to methyl mercury mainly through fish consumption (Canada, 1999), and results from a 10-year mercury exposure sampling programme indicated some of the highest human mercury levels in Canada among residents of Grassy Narrows (Wheatley, 1997). The contamination had significant impacts on Grassy Narrows residents, who had long relied on fishing as a means of food and as a cultural and economic base. The physical displacement of several Indigenous peoples from their traditional lands and territories, in Canada and around the world, has negatively affected their collective well-being. In fact, loss of land is argued to be amongst the most significant factor contributing to cultural distress within Indigenous communities (Richmond and Ross, 2009; Bartlett, 2003).

While there is a recognition that Indigenous peoples are made increasingly vulnerable to processes of environmental dispossession (the processes through which Aboriginal people's access and utilization of the resources of their traditional environment is reduced), relatively few researchers have examined the various dimensions that link Aboriginal peoples to their physical environments, nor of the health consequences as these ties are severed (Richmond and Ross, 2009; Waldram et al., 2006; Richmond et al. 2005; Wilson, 2003; Wheatley, 1998). It is therefore essential for research on the environmental health of First Nation communities to address the therapeutic connection with Mother Earth and acknowledge these differences when investigating the relationship between health and place (Wilson, 2003). Furthermore, there is a need to explore the potential changing connections between First Nations people and Mother Earth in contaminated environments. In response, this research uses the theory of therapeutic landscapes (Gesler, 1991; Williams, 2007) to explore how contamination in Aamjiwnaang First Nation may have potentially disrupted the relationship between the people and Mother Earth in that community. The research has the following specific objectives:

1. To explore how the contamination of the Aamjiwnaang First Nation has impacted residents perception of the therapeutic nature of the landscape.
2. To investigate residents' perceptions of changes in their relationship with Mother Earth as a result of environmental contamination.

This research extends the importance of using therapeutic landscape theoretical constructs beyond 'sacred' and extraordinary places of healing (Baer and Gesler,

2004; Milligan et al., 2004; Gesler, 1998; Williams, 1998), to explain the everyday lives and changing healing geographies of a people in a contaminated landscape. The findings will contribute to our understanding of the changing relationship between First Nations and Mother Earth in the numerous communities suffering from environmental contamination.

## RESEARCH CONTEXT

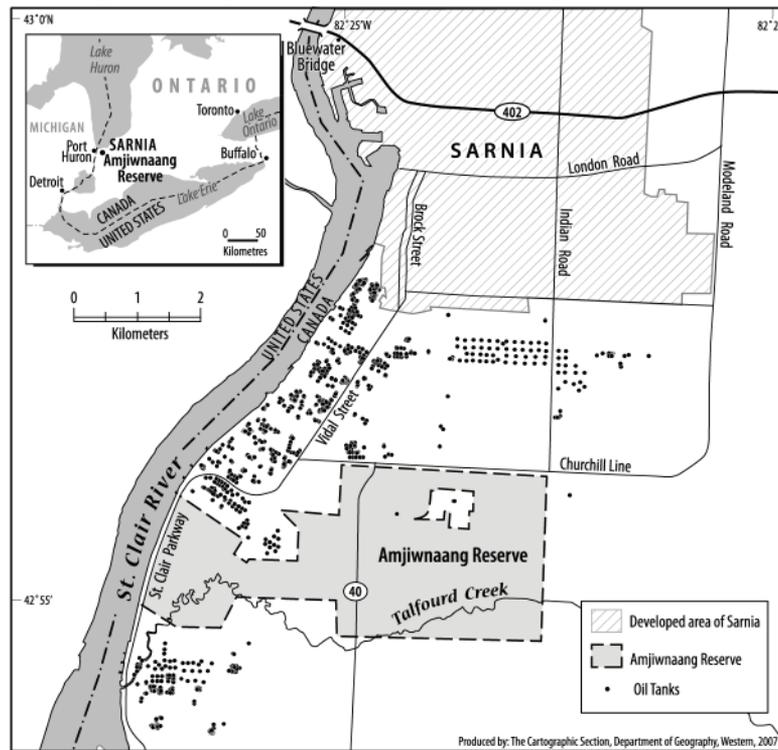
In 1827, the Treaty of Amherstberg was signed by the British Crown designating land areas for Stony Point, Kettle Point, Walpole Island, and the Chippewa of Sarnia (Plain, 1951). The Chippewa of Sarnia, now Aamjiwnaang First Nation, was designated a large tract of land bordering on Lake Huron and the St. Clair River, which they occupied until the discovery of oil and the establishment of several petrochemical industries in the Sarnia area. The Aamjiwnaang First Nation (pop=850) is now completely surrounded by the largest complex of petrochemical industries in Canada, with facilities including Bayer Inc., Dow Chemical Canada Inc., Shell Canada, Imperial Oil (Esso), and NOVA Chemicals (Figure 1). The conglomeration of petrochemical industries in the Sarnia area is referred to as 'Chemical Valley' (CV) because it is the centre for more than 40% of Canada's chemical industries. Even though Aamjiwnaang First Nation is surrounded by petrochemical industries, the unemployment rate in the community is 21.4% compared to the 6.1% average in the province of Ontario (Statistics Canada, 2001).

Concerns about environmental contamination in Aamjiwnaang First Nation have persisted for more than a decade. In a 1996 report commissioned by Aamjiwnaang, more than a dozen locations within the community were found to be contaminated with heavy metals (such as mercury and nickel), PCBs, polynuclear aromatic hydrocarbons (PAHs), pesticides and organ chlorine hydrocarbons (Gilbertson et al., 2001; Health Canada, 1998). Talfourd Creek, which runs through Aamjiwnaang and empties into the St. Clair River, was tested for sediment quality, revealing levels of lead nine times higher than The Ontario Ministry of Environment guidelines for aquatic life (Mathewson, 2005). A follow-up in 2004 to test sediment quality for selected sites throughout the community revealed arsenic, cadmium, copper, cyanide, DDE, lead, mercury, nickel, silver, and zinc all significantly exceeding Ontario's 'lowest effect' levels for biological impact in sediment (the point at which living organisms are harmed) (Atkinson Davies Inc, 2005). Further, many of the pollutants released by the surrounding industry which are contaminating air, soil, water and fish, are proven endocrine disruptors (Craig, 2005).

A community health survey conducted by the Aamjiwnaang Environmental Committee reports that about 17 percent of adults and 22 percent of children surveyed have asthma; 26 percent of adults experience high blood pressure; 26 percent of adults and 9 percent of children under 16 experience severe and chronic head-

aches; 16 per cent of adults and 27 percent of children experience skin rashes (including eczema and psoriasis); and 39 per cent of women surveyed have experienced a miscarriage or stillbirth among other illnesses (Ecojustice, 2007; CBC, 2008). Recently, community concerns were amplified when residents were made aware of a declining sex ratio of 2:1 in favour of girls in the community (Mackenzie et al., 2005). Several factors were identified as contributing to the declining sex ratio, including exposure to chemical pollutants from CV. Invariably, this and previous studies have resulted in increasing awareness of the negative effects on chemical pollution in the area, hence the need to explore the impact of environmental contamination in Aamjiwnaang First Nation landscape.

Figure 1: Map of Study Area (Amjiwnaang First Nation).



## THE THEORY OF THERAPEUTIC LANDSCAPES

In line with Appleton's (1975) ideas on the experience of landscapes, Gesler (1991) developed the theory and concepts of therapeutic landscapes. This theory explains how certain places can achieve lasting reputations for providing physical, mental,

and spiritual healing (Gesler, 2005, 1998, 1992, 1991). According to Gesler, studying landscapes for their therapeutic effects allows us to find out how societies living in different places and times have established healing settings. Gesler (1991) suggests that we need to understand how language, symbolism, ideology, and meaning influence a place and create a therapeutic landscape. Gesler's theoretical constructs demonstrate how humanistic influences on the definition of geographic landscapes reveal that these places possess human, cultural and symbolic meanings. Using examples from modern and alternative medicine, Gesler argues that physical landscapes have a long tradition of representing healing places.

Furthermore, these landscapes are not only influenced by physical and built environments, they are a reflection of human actions and intentions, as well as the structures and restraints imposed by society. The cultural symbolism operating at any particular geography includes natural characteristics of the landscape such as scenery; human characteristics such as feelings of rootedness and identity; symbolic features such as healing myths; and sensitivity to cultural beliefs. The understood truths about a particular place are culturally and reflexively constructed from experiences, perceptions, ideologies, attitudes, and feelings (Williams, 2007, 1999; Kearns and Gesler, 1998; Gesler, 1998).

Since Gesler's conceptualization of therapeutic landscapes in 1991, the theoretical constructs have been used to understand the connection between health and place. For example, Williams (1998) has taken the concept of therapeutic landscapes and used it to explore the humanistic perspective on holistic medicine. According to Williams, the geographies that holistic landscapes represent are understood not only as healing places, but places associated with the maintenance of health and well being that integrates cultural, spiritual, supernatural, and individual beliefs. Referring to Gesler's discussions of the importance of symbolic landscapes, for example, Williams uses the North American aboriginal peoples' use of the medicine wheel of health and healing to demonstrate that landscapes are culturally defined and symbolically important to the people who live there.

The theory of therapeutic landscapes has also been used to understand other 'places' used for relaxation in a variety of ways, and to demonstrate the health benefits of such places for spiritual growth, mental growth, and personal restoration (Palka, 1999; Thurber and Malinowski, 1999). Further, Milligan et al. (2004) have suggested that gardening as a leisure activity by older people in northern England represents a simple way of maintaining health. Gardening represents an opportunity to improve an individual's emotional, physical and spiritual health. This study is unique in that it explores how people may use communal gardening plots that reduce the physical demands associated with gardening, while benefiting from the healing powers of nature as well as participating in an activity that they enjoy.

Taking this further, others have argued that 'health-affirming' and 'health-denying' places can co-exist in people's everyday lives, that is, healing places are not limited to places celebrated for their reputed healing qualities (see DeVerteuil and Andrews, 2007; Milligan, 2007; Williams, 2007; Wakefield and McMullan, 2005);

and that there has been limited investigation into 'unhealthy places' (Williams, 2007; Wakefield and McMullan, 2005; Wilson, 2000; Williams, 1998).

Wilson (2003) emphasizes that the concept of therapeutic landscapes should be broadened to include the everyday lives and geographies of First Nation peoples, since for them, the land (Mother Earth) represents more than a physical space, but an association between symbolic, spiritual, physical, social and cultural elements. According to Wilson (2003), research often overlooks the complex ways in which the link between health and place is manifested simultaneously in First Nation peoples' everyday lives; and how the link between health and place in these contexts may be changing over time. In support of these concerns, this paper extends the literature by examining how the therapeutic nature of First Nation landscapes may be changing in a sentinel high exposure environment. With several First Nation communities exposed to contamination, the Aamjiwnaang First Nation situation is unique because residents are exposed to several sites simultaneously.

## RESEARCH METHODOLOGY

Entry into the community was obtained through the Aamjiwnaang Environmental Committee (AEC), with initial contacts in the fall of 2005 instrumental in developing the direction of the research. Following final approval from the Band Council, the AEC offered their support for the study and in-depth interviews (n=18) were conducted with both men (n=9) and women (n=9). Participant selection was done with the assistance of the AEC who made initial contact with community members to inform them about the study and enquired on their willingness to participate. All participants were local residents 18 years or older, and represented a variety of age groups (Ages: 30-40=2, 40-50=7, 50-60=5, 60-70=3, 70+=1). Although the interviews were under-represented by young adults in the community (<age 30), we feel the participants in the study gave their nuanced views about how things may have been changing overtime. Only two of the residents were born in another city other than Sarnia, and none had lived out of the community for more than six years in their lives. All residents interviewed currently have family members also living in Aamjiwnaang. This seems to demonstrate that Aamjiwnaang residents are likely to remain in the community, or likely to return if they leave.

An interview checklist was developed on topics based on the study objectives and existing literature on First Nation perceptions of the land and health, contextualizing the checklist to the exposure situation in CV. Examples of some of the questions that were asked include: Could you describe how important the health of the land is for maintaining your health? Could you explain your relationship with the Land (Mother Earth)? Do you feel that your relationship with Mother Earth is the same as it was in the past with your ancestors? What are your main concerns or worries about living here? Could you describe your experiences with pollution from the CV. Both the AEC and Band Council reviewed the interview guide providing culturally

and contextually appropriate suggestions, concomitantly ensuring flexibility to allow for additional issues to be raised by participants.

The study was approved by the Research Ethics Board for Non-Medical Research Involving Human Subjects at The University of Western Ontario. Thereafter, letters of information were mailed to residents who had shown interest. Follow-up phone calls were made by the AEC to arrange interviews.

Three preliminary interviews were conducted to verify the appropriateness of the questions for the community. Two interviews were conducted by a researcher and a member of the AEC, a co-author of this and another manuscript (Luginaah et al, 2010). After the first round of interviews, the researchers and AEC member discussed the responses to the questions, providing further clarification where necessary and new probes for questions yielding little or vague responses. This also enabled a cross check of how interview questions were being asked and interpreted to ensure cohesiveness and increase reliability of the results.

All of the interviews were conducted in participant's homes or at a local community setting. The interviews were tape-recorded with the permission of the participants. Audio-taped interviews, averaging 1.5 hours in length, were transcribed verbatim and reviewed line-by-line to gain a general understanding of the interviews and the themes that were covered (Strauss and Cobin, 1990). Thematic and narrative analysis was conducted on the interviews with the aid of the qualitative software package NVIVO (Welsh, 2002). Our interpretative analysis was guided by the therapeutic landscape theoretical constructs. Under each theme, we created categories of responses to the questions that were asked prior to line-by-line coding, a coding method which is generally considered the most appropriate and in accordance with the criteria for establishing trustworthiness and credibility (Strauss and Cobin, 1990; Lincoln and Guba, 1985). To ensure the validity of the interview results as well as maintain trust with the community, copies of the transcribed interviews were given back to some residents to confirm that the interpretations in transcription represented adequately the meanings of those members (Baxter and Eyles, 1997). In accordance with Baxter and Eyles' (1997) who suggest building trust and rapport through prolonged engagement in the field, one researcher attended several meetings of the AEC, as well as other larger community meetings for more than a year.

## RESULTS OF THE STUDY

Findings are presented based on themes which emerged from the interviews. Overarching themes included community values, community concerns, health concerns, and relationships with Mother Earth, with a specific focus on how environmental contamination may be leading to changes in residents' relationship with Mother Earth. Direct quotations from transcripts illustrate selected themes and serve to contextualize the responses. To protect the anonymity of the respondents,

only pseudonyms are provided at the end of each quotation.

### *Community Values*

During the interviews, residents were asked to describe what they valued most in the community and also their relationship with the land. Several of these residents discussed the importance of Mother Earth as the underlying connection to Aamjiwnaang. The participants explained that the place where their ancestors lived and were buried has a cultural significance and a value to the community. As indicated in the comments below, residents hold strong feelings of 'home' to Aamjiwnaang, which is reinforced by the closeness of family, friends and neighbours:

“... this is the land that has always been inhabited by generations of our ancestors...this is also where a lot of our ancestors are buried...that's what holds us here as a people...wherever we go, whether or not we come back here to live or we come back here to be buried we know this will always be our home...its more of a spiritual connection more than anything else, and we always know there will be family here...” (Jillian).

“We look out for each other, we are a family because we've known these people all our lives...it's a close community we do a lot of things together... ... we've always been that close...” (Courtney).

Although Aamjiwnaang residents discussed a strong sense of 'home' and community, the connection they have with their local environment goes well beyond values of a strong community. Consequently, residents voiced strong concerns about the restraints imposed on them by industries, making it difficult for them to connect with their healing landscapes.

### *Community Concerns*

Contamination of the Talfourd Creek, which holds historical and cultural significance to many residents in the community, has resulted in many residents feeling disillusioned with the amount of damage that has been done to their environment. Along the creek there are several warning signs (Figure 2) informing the public to keep away from the water because of its toxicity:

“It's terrible. It's really really bad. We try to keep our children out of there as best as we can...There are high levels of chemicals in there, mercury for one...high concentrations of toxic pollutants, not just one side, but it's just like flowing through the whole creek system.” (Mitch).

Figure 2: Warning Signs Along Tafourd Creek.



The pollution of the creek led many residents to express fear for the future health of their children (see Luginaah et al., 2002). Children enjoy playing in this creek, and many parents talked about the difficulty in “asking their children not to play outside”. Others feel that the children in the community will not grow up as they should, especially if “they are told to be afraid of Mother Earth”:

“I got two nephews that play in the creek, doing everything else that boys do...now they can't. One of my nephews has a mass of scars from scabs and blisters on his legs...this is from the chemicals in the creek. So my son will never be able to be just a boy because the kids here already are taught to be afraid of the water, whereas we were taught embrace the water as Mother Earth's blood for us...” (Ryan).

Participants agreed that the ‘blood’ (water in the rivers) of Mother Earth is contaminated. Some residents recalled when mercury was abundant in the ground, to the extent that some people used to dig it from their yards. Others remembered playing with mercury at their school ground. One participant talked about how mercury was so abundant that members of the community would dig and pan for it:

"I remember, gosh, it has to be 15, 20 years ago, there used to be this group of guys... They were actually panning mercury out of Talfourd Creek... They sold the mercury by the pound..." (Ginny).

Many residents also felt that their community is shrinking with underground pipelines everywhere:

"It just seems like we're just being overtaken because our community is shrinking and shrinking and the more the chemical plants grow and sprout up around us, we're being completely surrounded and 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." (Ann).

Participants also linked environmental contamination to the disappearance of several animal species. For example, participants indicated that the monarch butterfly which was once abundant in the landscape has disappeared and seems to be 'gone forever'.

"I miss the butterflies, I miss the wildlife. I haven't even seen a monarch butterfly for a long time... I don't see any daddy long legs spiders, I haven't seen any in the yard. We're missing a lot of things. Things are disappearing, the land is dying..." (Ginny).

Residents also suggest that many plants, and most of the fruit trees and apple orchards, which were once abundant in the community, no longer exist. Increasing community concerns further translate into health concerns.

### *Health Concerns*

As expected, residents were concerned about both short- and long-term health impacts of pollution. There was overwhelming agreement that the industries are causing an increase in the prevalence of respiratory diseases, reproductive problems and cancer in the community (see also CBC, 2008; EcoJustice, 2007). Of the 18 residents interviewed, 15 discussed cancer as a concern for themselves or family members, 10 discussed asthma or other respiratory problems and 4 were worried about reproductive health concerns. Increasing respiratory health problems among children provoked strong and emotional responses from the participants:

"My daughter used to go to the old daycare centre... and she also went to the pre-kindergarten, which is right near one of the chemical plants... then she began to have respiratory problems... the kids that were at the day care centre all had respiratory problems... they all had puffers... and my daughter still sometimes get these panic attacks because of her respiratory problems." (Jack).

Other residents attributed reproductive problems in the community to exposure from industrial pollution.

“My mother died of ovarian cancer when she was 27...now whether that’s because she lived here and got it from being around the chemicals I don’t know... then I also developed polycystic ovaries...lucky to have two kids but there are a lot of women who have a lot of fertility problems here...they either have problems conceiving or several miscarriages.” (Lina).

Another resident also discussed reproductive problems in women in the community and related this to the recent issue of sex ratio inequality in the community, as it has been reported that more girls than boys are being born,

“...something is wrong with the ovaries or the uteri of the women... I never really heard of too many men having many problems reproducing, mostly is it the women. A lot of girls are born instead of boys...There’s more girls than boys...well really noticeable within that past ten years. Majority of the babies being born are girls.” (Marie).

Residents’ fears are reinforced by the lack of clear information about types of emissions from both the industries and government. For instance, residents discussed an instance when they were offered money by an industry to clean up their homes as a result of a chemical release, while the industries message to the community was that the fallout had no potential health impacts:

“They offered me 300 bucks [dollars]... they offered to clean my house and my car...they came and cleaned my TV...they were offering to clean the carpet but I had already ripped my carpet out...they were sending people into every home, cleaning peoples’ knick-knacks...meanwhile, they kept saying the exposures is not a health risk... I didn’t believe that...that’s just them just saving their own butts...” (Janet).

Residents are worried that one day there will be a large industrial accident, and before they know it, ‘it will be too late’.

### *Residents Relationship with Mother Earth*

Consistent with the literature (e.g., Wilson, 2003; Peters, 2001; Weaver, 1996) residents agreed that without Mother Earth they would “have nothing”. Participants explained the relationship with Mother Earth as one that is an appreciation to the Creator, and that Mother Earth represents the land, and all living things, with the water flowing on the earth representing her ‘blood veins’. As indicated in the comments below, participants talked about their connections (which are sometimes personal) to Mother Earth:

“Well first of all, it’s a legacy that’s handed down from our ancestors...I consider myself a part of the soil...all the vegetables that we eat, the air that we breathe, and things like that, are central to our being, so...quite literally we are one with the earth. And when you think about it that way, there is no separation between human and vegetation, it’s all life. It’s totally all life...it’s an appreciation that all creation is made from the Creator, and I consider myself, like, related to the trees and the flowers...I’m not any more important than the tree that produces the oxygen that I must breathe” (Robert).

Participants also talked about their connections through ‘sacred and healing places’ within the landscape such as the community Cemetery or graveyard:

“Our burial site is sacred even though it is surrounded by the industry. We hold that area very sacred and we try to protect it as best as we could from pollution...Every part of Mother Earth has these power areas, they have this aura, an energy that you can feel. I believe that there is still that power even though there is so much pollution around here...” (Mitch).

Invariably, as a result of prolonged environmental contamination, several residents in Aamjiwnaang believe that ‘Mother Earth is sick’:

“I think there are people here in our community, especially people that are more aware like the Environmental Committee know that Mother Earth is sick, it’s like she has a cancer...” (Jillian).

“The entire landscape is polluted, everywhere. See, you live in it and you become a part of it and it becomes a part of you. Mother Earth is sick...and so sicknesses fill the hospitals. Sicknesses fill the homes, sickness everywhere...” (Tom).

Others agree that because ‘Mother Earth is sick’, her provisions that once kept community members healthy are now ineffective,

“Well, Mother Earth had everything to sustain us. She had all the elements that we needed to survive. She had the water and the plants...but she has been severely abused...her blood veins [the water] has been polluted, the air has been polluted and the plants are turning toxic and they’re not doing what they use to do... she is unable to provide the same kind of healing that she used to...” (Ann).

With Mother Earth being “sick”, some residents are experiencing a changing relationship with her.

### *Changing Relationship with Mother Earth*

In response to whether the health of Mother Earth affects their relationship with her, only two residents mentioned that their “relationship with Mother Earth can never be changed”:

“Oh no, not Mother Earth, no. No, it’s still there, I mean...I’ll never ever lose the respect for her, I will always respect her and try to do my best to take care of her, the best that I can and teach my children too...” (Marie).

While residents generally agreed that their relationship with Mother Earth remains, however, some indicated that CV have compromised the ‘therapeutic’ qualities of Mother Earth in various ways, and especially their ‘sacred’ places. Several residents observed that their opportunity to connect with Mother Earth is constantly changing as indicated in the comment below:

“We are unable to relate to Mother Earth the way we would like or our ancestors use to. There are many things we cannot do any longer, such as gardening and picking medicines...It is very sad, but the industries are taking away everything on our land, everything we like to do...” (Ginny).

Participants in study indicated that among Indigenous people, the Cemetery has cultural and personal significance, yet in Aamjiwnaang, industry is perceived to be invading this place not only with chemical contamination, but with video surveillance, thus influencing their relationship with this ‘healing’ place:

“There is a security camera on Suncor property faced down onto our Cemetery, which is a Human Rights violation that should not be ignored...They say that they are not monitoring the Cemetery, but rather their pipeline...But there are many people on this reserve that will tell you that if you go to the Cemetery, the camera will follow you everywhere. We brought that up during the roadblock [protest] and Suncor agreed to take down the camera, but they took down a camera that shined onto the highway instead, so when I go to my father’s or grandfather’s grave, or when my wife goes to her father’s grave, we are being watched.” (Ryan).

Contamination of Talfourd Creek means residents are also unable to enjoy their “previous relationship with the river”:

“Talfourd Creek flows through our ceremonial grounds, yet it is so polluted... That is always in the back of my mind when we have cultural gatherings there...that ought not to be...So it affects my relationship with Mother Earth, even if it is just the thought of it.” (Robert).

For many residents using traditional medicines is integral to their connection with Mother Earth, however, some residents suggested that community members

do not collect as many traditional medicines as past generations because of chemical contamination:

“As an Annishaabe person learning about life, I am also learning about the herbal medicines of our land and their natural healing powers. However, within Aamjiwnaang, I will not pick any of the medical herbs or roots around here, and I will not use them either. Also, people who know I pick medicines tend to ask me if I picked them from the Sarnia area [CV], and if I say yes they won't use it. They're scared. They know about this area, so they won't use the medicines from here because they say it is contaminated...they use the medicine from somewhere else.” (Mitch).

Participants also talked at length about how people in the community used to rely on gardening for food, but are now unable to do so because they fear the soil may be contaminated:

“Mother Earth use to feed us, but CV is just destroying everything...I'll like to have a garden so bad, but she's too sick. I wouldn't want to eat anything knowing that it grew here...If I were to move somewhere far away from all these chemicals, then 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 some of our culture...” (Marie).

There's no land to use...the land is full of toxins and mercury... testing revealed different stuff in the soil. So if it's in the soil, it's obviously going to be in the crops...My grandfather always had a garden but now I wouldn't even think about it... we are getting the soil tested and it is coming up bad every time...” (Ann).

While a majority of the residents interviewed suggested that they will not be gardening, there were a few who felt that contamination was not a threat to their gardens. For example, one resident suggested that if the fruits or vegetables from the garden were washed well before eating, there was no reason to be concerned. Another felt that “if a garden yields produce, it is a sign that it is not contaminated, because nothing will grow in a contaminated garden in the first place”. Those in support of this view indicate they will eat from their gardens until it is “scientifically proven otherwise”. For the majority of residents, Mother Earth is “sick” and her sickness has resulted in her inability to provide all things she used to give. Under such circumstances, residents are utilizing the notion of therapeutic selectivity by turning to some healing and sacred places for their health and well-being, but not others. For instance, in the comment below Robert talks about going to his grandfather's property because he feels this place still has the power (aura) that enables him to communicate with his ancestors:

“Well, these days each person has his/her own place where he/she goes to appreciate Mother Earth. But my favourite place now is my grandfather’s old property... This is a place I still go because when I go there, it is for a specific reason. I take a gift, so that I can talk with my mom or dad or grandfather... And my gift would be something special that they would like... I offer tobacco and ask the Creator to focus my attention and the attention of my relatives, my ancestors, so that I can communicate with them... Here, I do not have to deal with pollution as much” (Robert).

Similarly, in the comment below, Mitch explains why the Cemetery has remained as a ‘sacred’ place for people in the community despite being surrounded by pollution and security cameras:

“We still hold the Cemetery very sacred and we try to protect it as best as we can from industrial pollution, we try to keep it as clean... there are what I call power areas. Every part of Mother Earth has these power areas, they have this sort of aura, this is the energy that you feel when you are there... I believe that there is this aura in the Cemetery even though it is being surrounded by the industries. Because of the reverence that we have in the spirit of our living and our ancestors, we still respect the people that were buried there... So I still go there to connect with my ancestors and relatives” (Mitch).

As indicated above, there are specific or sacred places that individuals go that are unique to them:

“Well, Powwow grounds is still sacred to us even though Mother Earth is sick... the Powwow drumming remains the heartbeat of the Earth, and whatever happens we will go to the Powwow grounds for healing... I go there every time” (Marie)

Other places suggested as special or sacred in the community members still hold dear include the location of the original Band Office and hunting areas in the community.

## DISCUSSION AND CONCLUSIONS

This study examined how environmental contamination may be affecting Aamjiwnaang First Nation residents’ therapeutic relationships with the land (Mother Earth). The research offers new insight into the concept of therapeutic landscapes, particularly in contaminated environments. To date, most geographical work in this area has focused on understanding or drawing out those positive elements of natural, built and sacred places that contribute to health and well-being (Milligan and Bingley, 2007; Williams, 2007). What this study adds to the literature is an under-

standing of how people's relationships and perceptions of the therapeutic nature of landscapes may be changing as a result of changing environmental conditions.

The uncertainty of what residents are exposed to daily has resulted in fear, and reinforced by earlier research indicating a changing sex ratio in favour of girls in the community (Mackenzie et al., 2005). However, the general view that 'Mother Earth is sick' does not affect some residents. These individuals hold dear to her healing qualities, their deep seated relationship with her, and their philosophical conceptualization of health and well-being. The findings align with the literature to suggest that understanding Aamjiwnaang residents' relationship between place, identity, attitudes and beliefs about the landscape in which they live, and are surrounded by, are essential to discussing issues related to their health and well-being in a highly exposed environment (Eyles and Williams, 2008; Richmond et al., 2007; Wilson, 2003; Peters, 2001; Williams, 1998).

The findings signal an emerging dilemma whereby residents want to hold tight to their relationship with Mother Earth on the one hand, while staying away from contaminated 'healing' and 'sacred' places on the other. While the meaning of 'healing' and 'sacred' places may be person specific (including the way in which they are used to relax or heal mentally, spiritually, or emotionally), the impact of contamination has led to the health of the entire community being put into question. With 'healing' and 'sacred' places invaded by industries, residents are forced to reflexively re-evaluate the meanings they have thus far attached to such places. This shows that landscapes that were considered to be therapeutic at one point in time may not remain that way. For instance, community members are worried that they can no longer visit their relatives' graves peacefully, because the industry has security cameras pointing at them in all directions. The implication is increasing psychosocial distress among residents as the therapeutic nature of 'places' that once provided spiritual, mental, emotional, and physical well-being are eroding away (Kearns and Gesler, 1998).

The sustained destruction or invasion of healing and sacred sites seems to have affected the ontological security of residents, leading to disrepute of Aamjiwnaang as a place to be called 'home'. Both environmental contamination and the influence of surveillance are an invasion of the home-space of the Aamjiwnaang First Nation, and both have different negative effects on health and well-being of the community. While environmental contamination may be leading to both physical and psychosocial health effects, surveillance of sacred sites on the other hand may be leading to environmental dispossession (see Richmond and Ross, 2009). This calls into question the constancy of the material and social environment, the day-to-day routines of residents, the place where people should feel most in control of their lives, and the secure base around which their identities are constructed (see Padgett, 2007). This has altered the way of life of both adults and children, leading to changes in their ability to connect to Mother Earth as they would like to.

Residents would like to maintain an intimate relationship with 'Mother Earth' in all aspects. However, they are compelled to engage in what can be referred to as

therapeutic selectivity, whereby they are choosing only the healing places and relationships to Mother Earth that they still consider as “somewhat healthy”. How long these selective relationships and healing connections may last amidst an ever increasing understanding of the chronic levels of contamination of the landscape due to the evidence from several (Mackenzie et al., 2005) and ongoing studies and exposure monitoring remains uncertain. In line with the notions of therapeutic landscape selectivity, the findings here suggest that a range of influences are acting to shape First Nation peoples’ relationship with Mother Earth, and in contaminated environments not all of these influences will do so in a positive way. Nonetheless, it is plausible that the weakening relationship between some residents and Mother Earth can only get worse (signalling negative impacts on residents’ health and well-being) if no intervention is initiated by government and industry. Only with intentional cleaning of the environment can Mother Earth begin to recover from her sickness.

Although we are unable to predict the lasting effects on children, it is imperative to recognize the potential impacts of parental fear on their mental health and well-being. Parental fears that affect restricted or unrestricted play in early childhood will play a significant role in influencing children’s perceptions and relationship with their landscapes in the future (e.g., Milligan and Binkley, 2007; Warry, 2000). This is more so considering children are not allowed to play outside because of contamination. Therefore, the extent to which the children of Aamjiwnaang’s everyday life experiences of play or lack thereof, may influence their worldviews in adulthood and the potential implications for their health and mental well-being is a concern.

The findings here may be generalised to other Indigenous communities that have to deal with multiple exposures sources. However, broad generalization may not be possible especially in communities with point source pollution where industry may be working with the community on exposure abatement (Luginaah et al., 2002). Additionally, potential limitations of this study may be due to the intense media coverage of Aamjiwnaang First Nation in recent times (CBC, 2008) and the involvement of the AEC in the recruitment of participants, as these may have biased participants’ responses one way or the other.

In the current situation, residents’ suggested actions to mitigate the problems should aim at increasing the choices of healthy ‘places’ the Aamjiwnaang First Nation can access. This could involve the clean up system for Talfourd Creek. This would reduce the risk to residents’ health and well-being, but more importantly decrease feelings of uncertainty and restore Talfourd Creek as a healing outlet for the entire community again.

This study was initiated by the Aamjiwnaang Environmental Committee, which followed with a keen interest the study and its results. By their involvement it has given them another dimension in their quest to ‘get something done’ in the community. There is great willingness on the part of the community to work with government and industry, yet most of their calls have been frequently ignored. We suggest a collaborative policy development and planning approach that recognizes the

importance of the cultural health of the Aamjiwnaang residents as essential in order to give the community an assurance that their concerns are being addressed.

The Ontario Environment Commissioner recently suggested that there is a need for better policy to protect First Nation peoples during environmental crises, especially in places like Aamjiwnaang (Poirier, 2005). In Aamjiwnaang, this may be accomplished by involving the community in discussions with the City of Sarnia, government (Health Canada and Environment Canada) and industry about environmental risk management and communication (Arnold, 1999). Many Aamjiwnaang residents think it may be too late, but collective hope exists that interventions will enable "Mother Earth to get better one day" for the sake of future generations. This task, however, currently appears daunting.

## ACKNOWLEDGEMENTS

This research was supported by the Social Science and Humanities Research Council of Canada (grant #: 410-2003-0304) and by funding from the Canada Research Chairs Program to Dr. Isaac Luginaah. We wish to thank the Chief and Band Council of Aamjiwnaang First Nation, the Aamjiwnaang Environmental Committee, especially Ada Lockridge and all the people who participated in this research. Special thanks to Dr. James Brophy and Dr. Margaret Keith for their help with the research process. We would also like to thank the anonymous reviewers for their extremely useful comments and suggestions.

## NOTES

1. Aboriginal peoples in Canada who are neither Inuit or Métis (Canada, 1996).

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