

May 8, 2006  
2005 Salisbury Winner  
Christianne Stephenson  
PhD Candidate  
McMaster University  
Hamilton, Ontario

I have just returned from four months of fieldwork at the Walpole Island First Nation<sup>1</sup> (WIFN). During this time, I conducted archival and ethnographic research for my doctoral dissertation, which focuses on the psycho-social and cultural impacts of water pollution and environmental degradation on the WIFN community.

The factors that contribute to environmental health problems are multifactorial. To capture the complexity of this issue, I have chosen to employ a range of theoretical orientations (grounded theory, political ecology), methodologies (participatory observation, participatory action research) and lines of evidence (archival and ethnographic data). There are three fundamental components to my research. The first involves a comprehensive historical analysis of industrialization and major water-related environmental health threats in the Lake St. Clair region. To this end, I have conducted research at government archives in Lansing and Ann Arbor, Michigan and Federal and Provincial Archives in Ottawa and Toronto, Canada. The ethnographic component of my study focuses on political, economic, social and cultural aspects of water quality issues at Walpole Island. My fieldwork entails investigating community perceptions of environmental health risks and local grass root responses to environmental crises. Over the past few months, I have conducted interviews with elders, political leaders, hunters and fishermen, environmental technologists, resource protection officers, community health care workers, traditional healers, and environmental activists. This report outlines some of my preliminary findings.

## **Literature Review**

In Empires of Nature and the Nature of Empires: Imperialism, Scotland and the Environment (1997), historian John M. Mackenzie explores the dynamic and synergistic relationship between politics, economies, social processes, culture histories and the natural world, as it relates to the environmental history of the British Empire. His seminal work serves as a valuable template for framing and examining Aboriginal issues, for it lucidly illuminates how the imperialist dream of “manifest destiny” came to be realized through the concurrent colonization of indigenous lands, bodies and minds. Studies in environmental history and historical ecology investigate how processes of colonization, assimilation, and industrialization have shaped the physical environments of First Nations and Inuit populations. Part and parcel of this endeavour involves examining how these forces have influenced the health status of Aboriginal communities. For centuries, Indigenous populations around the globe have experienced major changes to their lands, economies, life ways and cultures as a direct result of imperialism and the post-colonial processes of industrialization and globalization. Understanding the history, nature and scope of contemporary First Nations health issues, including environmental health issues,

requires analyzing Aboriginal health and wellness within the context of the legacy of colonialism.<sup>2</sup>

It is estimated that during the first two hundred years of colonization and settlement, Aboriginal populations declined between 50% and 90% as a result of warfare, the loss of land, famine and disease (Report of the Royal Commission on Aboriginal People [RCAP] Volume 1 1996). The rapidly growing settler population and shift from fur trade economy in the East to agricultural settlements during the 1800s led to an increased demand for land. Establishment of the reserve system in Canada was accompanied by the implementation of assimilation policies. The *Indian Act* of 1876 (and its subsequent revisions) was designed to control virtually every aspect of the lives of Aboriginal peoples. The Act stringently undermined or outlawed long-standing Indigenous social systems, values and spiritual practices (RCAP Volume 1 1996 as cited in Simpson 2001:9). Beginning in the 1950s, medical care was provided to Aboriginal communities in the form of on-reserve nursing stations. Although these initiatives helped to improve the poor health status of Natives living on reserves, they also came at a great cost (Simpson 2001:10). Aboriginal communities lost control over their own health and health care. Western medical practitioners had little knowledge of, or respect for Aboriginal traditions, values, and health world views (RCAP Volume 3 1996 as cited in Simpson 2001:10). The legacy of these policies continues to be felt in Native communities where disproportionately high rates of infectious and chronic diseases, suicide and substance abuse continue to persist.

Industrialization and globalization are modern manifestations of imperialism. Like the pathogens and plagues that accompanied the first colonization of the Americas, “modern development” has introduced its own form of health hazards- those of ecological degradation and environmental pollution. Dioxins, Polychlorinated Biphenyls (PCBs), and heavy metals are industrial byproducts that pose a serious threat to the integrity of the earth’s ecosystems. As part of the circle of life, human health is vulnerable to the risks created by environmental contaminants. Endocrine disorders, respiratory ailments, birth defects and various cancers are associated with exposure to toxic substances (Bend et al. 2005). Although air, water and soil pollution affect everyone, there is an unequal distribution of environmental health risks within populations. A growing body of research has shown that “race”, ethnicity, and income are determinants of toxic exposure. Industrial complexes and waste disposal sites are more likely to be built in neighbourhoods and areas occupied by visible minorities, the poor and the disenfranchised (McElroy & Townsend 2004).

Widespread mercury contamination among residents of Minamata, Japan brought international attention to the issue of water contamination. In Canada, water quality has been an enduring issue for Aboriginal communities. There are several factors that place Aboriginal populations at a higher risk of exposure to contaminated water. Due to limited funding and resources, many First Nation communities lack proper water treatment infrastructure. Waldram et al. (1995) have reported that the water in approximately twenty percent of Native reserves is considered to be “undrinkable” by residents. Robinson and Moffat (1985) describe a major outbreak of rotavirus gastroenteritis in a James Bay Cree

community. Recently in a highly-publicized case of water contamination, residents of the Kasechewan reserve in Northern Ontario were evacuated from their community due to a serious E-coli outbreak.

Aboriginal populations have a higher risk of ingesting contaminated food sources because of their traditionally high consumption of local fish and wildlife. In the 1970s, high levels of mercury in fish from the English-Wabigoon River system in Northwestern Ontario and Eastern Manitoba had serious health consequences for members of the Grassy Narrows and White Dog reserves. A large number of residents were diagnosed with *Minamata disease*, which refers to the suite of clinical symptoms associated with mercury contamination. Community members were also diagnosed with a broad spectrum of “psychological, social and behavioural outcomes as a consequence of actual or perceived contamination”<sup>3</sup> (Dunn et al. 1994:1093). Clinical studies of PCB contamination at the Akwesasne Mohawk Nation reserve (which borders the St. Lawrence River in Northern New York State, Ontario and Quebec) have revealed that there is a statistically significant inverse relationship between growth in youth and levels of PCBs (McElroy & Townsend 2004; Schell 1997). Michael Edelstein (1988) and Janet Fitchen (1989) have brought attention to the emotional and psychological impacts of living in a high risk, contaminated area, while anthropological studies of Superfund sites have documented the struggles of local communities to understand environmental health threats and respond to these threats at the grass roots level.<sup>4</sup> In the same vein, Christine Egan’s work (1999) on cultural perceptions of pollution has provided an important gendered analysis of differences in how environmental contaminants are viewed by the scientific community and how they are perceived and understood by Inuit women.<sup>5</sup>

### **The issue of Water Quality at Walpole Island First Nation**

Since the beginning of the twentieth century, health concerns at Walpole Island have revolved around issues of ecological degradation and water quality; specifically, the adverse effects that can result from exposure to industrial contaminants. The traditional territory of this First Nation is situated in a region with a long industrial history. Canada’s oil industry began in Lambton County in and around Oil Springs and Petrolia - areas that were rich in oil and asphalt beds.<sup>6</sup> By 1863, Petrolia was the major supplier of crude petroleum products in Canada. The establishment of synthetic rubber manufacturing plants in Sarnia during the Second World War bolstered the city’s status as a major petrochemical centre. Today, Sarnia is the “chemical capital of Canada” where more than forty percent of Canadian bulk chemicals are manufactured, mainly through branch subsidiaries of U.S. corporations (Petroleum History Society 2005).

Walpole Island First Nation territory is located in the heart of the Lake St. Clair water system and downstream from Sarnia Ontario’s “Chemical Valley”. Over several decades, large amounts of toxic substances have been released into the St. Clair River in the form of accidental spills and allowable discharges (the latter permitted under “certificates of approval” issued by the Canadian Ministry of the Environment). It is estimated that a total of thirty-two major chemical spills as well as hundreds of minor ones were responsible for the discharge of more than ten tonnes of pollutants into the St. Clair River between 1974

and 1986 (Jacobs 1988:4). In addition to chemical spills, contaminants also enter the river in the form of agricultural run-off. Lake St. Clair is the tile bed for much of the farmlands of Southwestern Ontario and agricultural pesticides drain into the lake via the Thames Valley watershed. High winds and the passage of commercial shipping vessels re-suspend chemical sediments that have settled at the bottom of the St. Clair River (Assembly of First Nations 1995).

Persistent organic chemicals and metals are two of the greatest problems facing the Great Lakes and surrounding regions. Several organic chemicals mimic hormones and interfere with reproductive and immune systems. In the 1970s, water-birds in the Great Lakes region were among the most highly contaminated in the world (Colborn et al. 1990). Tumours, birth defects, and reproductive problems continue to be identified in Great Lakes freshwater fish species. Regional studies on pollution-induced injury in fish, turtles and duck species has provided further evidence of the serious physiological effects that can arise from exposure to toxins (Haffner et al. 1998). Segments of the human population who consume large amounts of fish and wildlife, particularly Native American populations have higher than average levels of several persistent chemical contaminants that have been linked to problems in child development (Colborn et al. 1990). In 1983, Lake St. Clair was identified as an “Area of Concern” by the Canadian-U.S. International Joint Commission (IJC), a bi-national regulatory body that monitors water pollution in the Great Lakes. This designation is based on evidence of biological communities affected by sediment contamination and toxic substances in the water (Marchand 1986). The St. Clair River is the main water supply for WIFN residents and a major resource for subsistence and sports fishing. There is a heightened concern over the potential human health effects resulting from exposure to contaminated water and fish at Walpole Island. Many resident feel that both the island’s water and food supply are jeopardized by water pollution. Childhood health is of utmost importance to community members. According to traditional Anishnaabe teachings, the seventh generation following the present is a cultural reference for evaluating health behaviour and outcomes (Pennesi 1999:12).

### **Preliminary Study to Assess Community Perspectives on Water Quality Issues**

Because the adverse effects of environmental health threats go beyond the strictly biological, assessing the social and cultural impacts of water pollution is crucial. Community discourses on water quality issues serve two very important purposes: they provide a view to the spectrum of local perceptions of pollution, constructions of health and notions of environmental risks, and bring attention to the kinds of strategies individuals and respective groups employ to respond to environmental crises. To explore local understandings of water pollution, semi-structured interviews with community members were conducted. Qualitative data in the form of oral narratives were collected and analyzed. The following is a summary of some of the major themes that emerged during interviews with Walpole residents.

#### ***1) Water pollution as a problem in the community***

All of the informants interviewed identified water quality as a major concern in the community. Interviewees were primarily concerned about the human health affects that may be associated with the consumption of contaminated fish and the degree to which environmental contaminants have compromised the integrity of the island's ecosystem.

## ***2) Knowledge of water pollution in the community***

In general, Walpole Island residents are well-informed on the issue of environmental contaminants. Scientific discourses disseminated through the popular media, spills notifications, and information disseminated by "word of mouth" were identified as primary sources of information on regional environmental health issues. A number of elders interviewed described cumulative changes in the environment that they have observed (first-hand) over the course of their lifetime. All of the interviewees were worried that the community's close geographical proximity to "Chemical Valley" increased their risk of exposure to industrial pollutants. Beach closures, water intake shut downs following chemical spills, the construction of a community water tower and new water treatment plant reflect community fears of exposure to industrial contaminants.

## ***3) Perceived effects of environmental degradation on human health***

Elders who were interviewed felt that community health has drastically degenerated through the years, and many attributed this decline to changes in the environment. A common theme in the elders' discourses was the prevalence of allergies, respiratory ailments, diabetes, heart disease, cancers and other health conditions not witnessed in previous generations. Many interviewees also discussed what they perceived to be unusually high levels of morbidity and mortality in the community. In many cases, elevated frequencies in chronic/ degenerative diseases were attributed to high levels of air and water pollution.

## ***4) Perceived effects of environmental degradation on the health of the island's flora and fauna***

Walpole Island First Nation is world-renowned for its ecological diversity. The island's wetlands, tall grass prairies and oak savannahs are home to many species of endangered plants and wildlife. The community supports a profitable sports fishing and hunting economy, and local game and fish continue to constitute an important part of the local diet. Environmental contaminants are considered a major threat to the island's ecosystem and food supply. The growth of many of the island's rare and endangered plant species are actively monitored through community-based initiatives funded by Environment Canada's Habitat Stewardship Program for Species at Risk. Many interview subjects believed that water and air pollution have caused specific changes to plant and animal populations on the island. Major ecological themes included decreased biodiversity, reduced plant size, shorter growing seasons, scarcity of medicinal plants, reduced amphibian and animal populations and the prevalence of "sick" and malformed fish.

Elders discussed how methods for acquiring water had changed through time. In the days before the community was connected to a centralized water distribution system (Hydro), water was hauled directly from the St. Clair River, creeks and wells. Water clarity, taste and overall “purity” were criteria used by residents to describe the state of the community’s drinking water. Elders described how the water was clear, clean and “safe” to drink prior to the establishment of industrialization in Sarnia and Michigan. Many commented on the present-day “cloudiness” of the water and its strong, unpleasant smell. Almost all of those interviewed said that they avoid drinking tap water because of the bad taste and concerns over whether the water is contaminated with chemicals. Most reported that they purchase bottled water, although this option was considered economically unfeasible by a number of those interviewed. Fear of exposure to contaminated water has also affected the lifestyles, behaviours and food choices of residents. Some informants disclosed that they forbid their children to swim or play in the St. Clair River. Although fish and wild game are staples of the traditional diet, fear of contamination has led a number of WIFN residents to reduce their consumption of these local food sources.

### ***5) Psycho-social stress associated with fear of exposure to water contamination***

Interviewees revealed varying degrees of psycho-social stress over the issue of water quality, and this stress manifested in various ways. Most of the community members interviewed worried about the effects of contaminants on the health of children. There was also concern over the added economic burden of buying bottled water. Many people were anxious over the possibility of a Valdez-type disaster occurring, given the high traffic of ocean-going freighters in Lake St. Clair and the St. Clair River. A majority of interview subjects did not feel that Walpole residents are alerted of chemical spills in a timely fashion. The absence of independent scientific evidence on the reliability of spill reports has made residents wary and distrustful of the information that is disseminated. Moreover, many felt that residents of nearby towns and cities (namely, Wallaceburg and Sarnia) are provided expedient and more accurate information on the time, nature and severity of chemical spills than Walpole residents.

### ***6) Cultural significance of water***

Traditional Anishnaabe teachings emphasize balance and the interconnectedness and interrelatedness of all living things. The *Natural Laws* foundational to Native life ways and spirituality are based on respecting the relationship between the lives of humans, animals and plants and maintaining and preserving nature’s equilibrium (Simpson 2001). In accordance with these laws, Walpole Island residents recognize their important role as stewards of the Earth. They recognize that the impacts of environmental pollution go beyond the loss of biodiversity. The destruction of the earth and its resources is perceived as severing the connection between humans, “nature” and a “higher spiritual being”. Losing the ability to “live off the land” is understood not only in economic terms, but in cultural, physiological and spiritual terms, as a loss of identity, health and well-being.<sup>7</sup>

Symbolically, water is viewed as the blood of the Earth Mother; the rivers, streams and groundwater are viewed as the Earth Mother’s veins which carry nourishment to all her

living parts and which sustain her. Because of its power, water is viewed as sacred and must be kept pure. Female beings are believed to be the corporeal manifestations of the Earth Mother and share many qualities with her, such as spiritual power and the ability to create life. Women are the keepers of the water (Women of Bkejwanong 1996). This cultural tradition is maintained at Walpole Island by the women's group, *Akii Kwe*. The group works tirelessly to promote awareness of environmental issues at the local, national and international level. The women's commitment to preserving and maintaining the earth's lands and waters for future generations represents an important form of local environmental activism in the WIFN community.

### **7) *Economic impact of water contamination***

In 1970, high levels of methylmercury detected in Lake St. Clair fish were traced to spills from two of Sarnia's DOW chemical chlor-alkali plants. As a result, commercial fishing in the area was banned for a decade (Marchand 1986:36-37). Many interview subjects described how the closure of the Walpole Island fishery affected the community. There was a substantial loss of revenue from commercial fishing. Fishermen received an extremely small amount of compensation from the government and from DOW Chemical (Marchand 1986:86-87). The ban was later used by the Government of Ontario as a policy instrument to remove commercial fishing permanently from Lake St. Clair through the imposition of a strict management regime that was implemented in the 1980s. Sports fishing was affected through the loss of permit revenue and guide incomes (Marchand 1986:88). Unemployment during this time period led to an "economic depression" for many people in the community. Some fishermen were forced to find other lines of work. Those men who had lost their social and economic role as breadwinners experienced a loss of self esteem. At the same time, boys and young men lost the opportunity to learn the trade of their fathers. Fishing and hunting are not only viable economic strategies but mediums through which the socialization of youth and "passing on" of cultural knowledge takes place. The roles of many local women also changed as many left home to seek employment as factory workers and domestic help in the U.S. Another area of the island's economy that was affected during this time period was the deposition of mercury-contaminated dredgings on Seaway Island (one of the islands that comprise WIFN). The health threat posed by these mercury disposal sites has yet to be determined, however, the presence of these deposits has greatly decreased Seaway Island's potential for future development (Marchand 1986: 88-89).

Today, water contamination and ecological degradation continue to threaten the livelihood of Walpole residents. "Traditional economies" have evolved into modern, multi-million dollar industries (Jacobs 1996:7). The value of natural resources is measured economically by the many employment opportunities that are connected to hunting and fishing (e.g. hunting club employees and guides), in addition to oil and gas sales, groceries, suppliers and outfitters, restaurant meals, lodging, transportation, sales of native crafts, commercial and sports fishing and trapping (Jacobs 1996:7). Reliance on natural resources and economies also helps to sustain traditions and cultural continuity (Jacobs 1996:7). The adverse effects of water and land pollution would affect both the economic viability and social cohesion of the WIFN community.

### ***8) Political aspects of water issues***

For many of those interviewed, environmental problems cannot be discussed separately from self-government issues. Many interviewees view self-government as the only step toward addressing and resolving environmental issues. From this perspective, effective stewardship and protection of the island's natural resources and wetlands requires WIFN to have power and control over decisions affecting their lands and waters (Jacobs 1996:6).

Since the 1870s, the WIFN has actively protected its lands, marshes and natural resources. This has been accomplished through the negotiation of various leases, and assertion of rights and title to the waters and marshlands. Throughout history, WIFN has "resisted the intrusion in its affairs of the Indian agent, and 'Headquarters', the Department of Indian Affairs in Ottawa, and non-Indian users of the marshlands" (McNab 1998:55). There are current movements among leaders (both at Walpole Island and other Native communities) to formalize industries' "duty to consult" with First Nations on various aspects relating to the environment (e.g. development plans, industrial spills, etc).

Walpole Island First Nation has taken pioneering steps towards self-government and sustainable development. In addition to conducting research to support WIFN land claims, the community has undertaken protests, abatement practices and advocacy work. These have included: lobbying governments and working with Chemical Valley industries to reduce discharges, conducting air-monitoring studies, investigating lead-shot poisoning, experimenting with conventional tilling and low-till farming techniques, and intervening against several development applications by large corporations which would affect either the ecozone or the land claims of the First Nation (Jacobs 1996:6-7). A rotary kiln (incinerator) application by Laidlaw, a pipeline project (Interprovincial pipelines) crossing the bed of the St. Clair River, and a proposed electrical bulk transmission line by Ontario Hydro were all subsequently denied or dropped by the respective corporations as a result of community protests and intervention (Jacobs 1996:7). Walpole Island's commitment to ecological issues has been recognized by several national and international agencies including the United Nations' "We the Peoples: 50 Communities Award" awarded in recognition of the First Nation's commitment to environmental issues (Jacobs 1998:18).

For the past year, my doctoral advisor, Dr. Regna Darnell and I have been involved in a number of environmental projects at Walpole Island. We have been privileged to participate in a lengthy and complex process of rendering local Indigenous knowledge of plants and animals into the local dialect of Nishnaabemwin (Walpole Island Heritage Centre 2006). As members of the University of Western Ontario Schulich School of Medicine's Ecosystem Health Research Team, we have worked on a community-based fish consumption study and feasibility study to assess Walpole Island community members' risk of exposure to environmental contaminants (see Bend et al. 2005). Next year (2007), we will commence the first-phase of a multi-year biomonitoring and epidemiological study focusing on environmental health issues in the community. I recently had the opportunity to present my preliminary findings at an International Workshop on Environmental Issues hosted by Walpole Island and York University's

School of Arts and Letters (April 2006). My initial fieldwork has laid a solid foundation for my doctoral dissertation. As there is still much work to do, my research will continue into next year.

I would like to extend my sincere thanks to CASCA's Executive Committee and the Salisbury Selection committee for awarding me the Richard F. Salisbury Award. The funding from this award has helped to subsidize the costs of my archival research and ethnographic fieldwork. It also allowed me to hire two research assistants from the Walpole Island Community. It is my sincere hope that my research meets CASCA's high academic standards, and does justice to the spirit, memory and legacy of an academic scholar as dedicated, influential, and accomplished as Richard F. Salisbury. I look forward to presenting my research at the CASCA annual meeting in Montreal in 2006.

#### Notes

1. Also known as *Bkejwanong* which means "where the waters divide" in the Ojibway language, Walpole Island consists of lands and waters in Lake St. Clair and the St. Clair River. Walpole Island First Nation is actually comprised of several islands that include Walpole Island, Squirrel Island, St. Anne Island, Seaway Island, Bassett Island and Potawatomi Island. These delta islands cover almost 24,000 hectares and are renowned for their unique flora and fauna, consisting of approximately 6,900 hectares of the most diverse wetlands in the Great Lakes Basin. Today, Walpole Island First Nation reserve represents the homelands of over 3000 Odawa (Ottawa), Anishnabeg (Ojibwa) and Potawatomi peoples, who together, comprise a political alliance known as the "Council of the Three Fires" or "Three Fires Confederacy". Beginning in A.D. 1650, the area of present-day Walpole Island began to be populated by Ojibwe and Ottawa groups who would eventually become well-established in Southern Ontario and Lower Michigan by the early 1700s. The Anishnabeg and Odawa peoples were the first to permanently settle on the island in the late eighteenth century, after most of Southern Ontario was surrendered to the British in the Ontario cessation treaties. A large number of Potawatomi from Kansas and Wisconsin settled on the island in the mid-1850s. The Potawatomi were one of many Indigenous groups displaced from their homelands in the 1830s and 1840s as a result of the American Indian Removal Act (Nin Da Waab Jig 1987).

Situated in the St. Clair River delta, Walpole Island's close proximity to strategic north-south, east-west transportation routes made it an important site of economic, social, and cultural exchange. The waterways surrounding Walpole Island continue to be an important transportation route and form an important part of the island economic base. Walpole Island's economy depends upon water resources. The area is a well-known tourist location for fishermen and duck hunters, and many island inhabitants base their livelihood on these industries, serving as hunting/fishing guides. The waters also provide very basic subsistence needs. Local residents frequently consume local freshwater fish from the local area (Nin Da Waab Jig 1987).

2. A large body of literature has addressed the impact of colonization on the health of Native Americans. These include studies on the emergence and transmission of infectious diseases and the social and cultural impacts of depopulation. Data on chronic and non-communicable diseases have illuminated the prevalence of chronic heart disease,

- hypertension and diabetes in Native communities, while research on particular government policies, such as the Indian Act and the institution of early Federal Indian government health services has revealed how processes of assimilation and marginalization have contributed to the poor health status of Aboriginal populations in Canada (Waldram et al. 1995).
3. Psychosocial effects can occur from either real or perceived threats of contamination. An example of psychosocial stress resulting from a perceived threat is that of Smithsville, Ontario. In 1985, it was discovered that people from this town were exposed to PCB contamination through leakage to groundwater from a nearby PCB transfer station built in 1978. The ensuing effects experienced by residents was attributed to psychosocial stress arising from a perceived risk as tests conducted in 1992 showed that the chemical exposures were insufficient to cause physical health effects in the population (Egan 1999).
  4. Michael Edelstein's study (1988) examines the response of Legler residents (a section of Jackson, New Jersey) to groundwater contamination and provides insights into the emotional stress of living near toxic waste sites. Similarly, Janet Fichten (1989) looks at the meaning of "home" to understand the emotional impact of groundwater contamination experienced by New York communities. One of the most publicized accounts of an urban community's exposure to toxic waste is that of New York State's "Love Canal" (see Gibb 1998).
  5. In her unpublished doctoral dissertation, Christine Egan contrasts scientific contamination discourses with those of Inuit women in Coral Harbor, Nunavut. She finds that pollution is a threat to cultural identity, as being Inuit is linked to the procurement and consumption of traditional foods. Prohibitions placed on the consumption of contaminated fish and wildlife jeopardizes Inuit cultural identity. Women's discourses also reveal concerns beyond those of industrial contaminants to "social pollutants"-that is, drugs and alcohol that have been brought into their community.
  6. In 1858, the Great West Railway completed its Sarnia to London line, coming within fourteen miles of the oil rich "gum beds". In that same year, James Miller Williams built a road to the railway and dug the first wells in what would later be known as Oil Springs Fields. In 1860, he established the Canadian Oil Company in Hamilton to market the approximately 10,000 barrels of "Victoria Rock Oil" that was produced in Oil Springs each year. Thereafter, Oil was discovered in Petrolia and in other Lambton County localities.
  7. An excellent example of Indigenous constructions of health is given by Naomi Adelson (1998) in her description of "being alive well", a health construct of the Cree of Great Whale River. This construct of health is defined through local beliefs, and practices, incorporating references to an idealized past, as well as contemporary ideals and practices of health that are tied to their identity as Cree. "Being alive well" means having access to and living in harmony with a larger environment that enables them to fulfill social, economic and spiritual needs. It draws upon cultural categories that are not tied to the biomedical construction of health and the absence of disease. It encompasses ideas and practices that transcend the individual body, comprising a whole way of life- past, present and future. For example, food is a key element to "being alive well", but in turn, is based on the availability of land and animals (their primary mode of subsistence is fishing). Furthermore, Cree food production and consumption are linked to the political and social

realities of being indigenous in Canada. Thus, to not be “alive well” is not about being sick *per se*, but to be in less ideal circumstances.

### References Cited

- Adelson, N. 1998. Health Beliefs and the Politics of Cree Well Being. London, Thousand Oaks and New Delhi: Sage Publications.
- Assembly of First Nations. 1995. The EAGLE Project: The Effects on Aboriginal Peoples from the Great Lakes Environment. Annual Report 1994-1995. Health Canada.
- Bend, J.R., B.A. Corbett, R. Darnell, C.P. Herbert, G. Koren, N. Kowal, M.J. Reider, C. Stephens, C.G. Trick. 2005. Feasibility of Conducting Epidemiological Studies to Assess the Health Risk of the Walpole Island First Nation Community from Exposure to Environmental Contaminants. Report prepared by the University of Western Ontario Schulich School of Medicine Ecosystem Health Research Team. Funded by the Environmental Contaminants Program, Health Canada.
- Colborn, T.E., A. Davidson, S.N. Green, R.A. Hodge, C.I. Jackson, & R.A. Liroff. 1990. Great Lakes, Great Legacy? Harper: The Conservation Foundation and the Institute for Research on Public Policy.
- Connor, L., C. Treloar, and N. Higgenbotham. 2001. “How to Perform Transdisciplinary Research: Qualitative Study Designs and Methods”. In Health Social Science: A Transdisciplinary and Complexity Perspective. (N. Higgenbotham, G. Albrecht & L. Connor, eds.) pp. 227-266. Oxford: Oxford University Press.
- Dunn, J., S. Taylor, S. Elliot, S. Walter. 1994. Psychosocial Effects of PCB Contamination and Remediation: The Case of Smithsville, Ontario. *Social Science and Medicine* 39(8) 1093-1104.
- Edelstein, M. R. 1988. Contaminated Communities: The Social and Psychological Impacts of Residential Toxic Exposure. Boulder, CO: Westview Press.
- Egan, C. 1999. Inuit Women’s Perceptions of Pollution. Unpublished Ph.D. dissertation. Winnipeg: University of Manitoba.
- Fichten. J. M. 1989. When Toxic Chemicals Pollute Residential Environments: The Cultural Meaning of Home and Home Ownership. *Home Organization* 48(4): 313-324.
- Gibb, L. M. 1998. Love Canal: The Story Continues...Stony Creek, CT: New Society Publishers.
- Haffner, G.D., V. Glooschenko, C. A Straughan, C. E Herbert, R. Lazar. 1998.

- Concentrations and Distributions of Polychlorinated Biphenyls, Including Non-Ortho Congeners, in Mink Populations from Southern Ontario. *Journal of Great Lakes Research* 24(4):880-888.
- Jacobs, D. 1996. "Witness Statement". ICI Canada vs. Ontario Consolidated Hearings Board. Transcription of Hearing Proceedings (Walpole Island Heritage Centre) 19.1 (1-13).
- \_\_\_\_\_. 1988. The Great Lakes Today: A View of Bkejwanong. Paper presented at *Reddin Symposium XI: The Environment of the Great Lakes*. Canadian Studies Centre, Bowling Green State University.
- \_\_\_\_\_. 1986. Environmental Impacts on Fishing Economies: A Community-Based Approach, Walpole Island Reserve, Ontario, Canada. Occasional Paper No. 9: Nin Da Waab Jig Heritage Centre.
- Marchand, S.J. 1986. Environmental Impacts on the Lake St. Clair Fishery: A Case-Study of Mercury Pollution and its Effects on Walpole Island Reserve. Occasional Paper No. 11 March 1986: Nin Da Waab Jig Heritage Centre.
- McElroy, A. & P. K. Townsend. 2004. Medical Anthropology in Ecological Perspective Fourth Edition. Boulder, Co: Westview Press.
- McKenzie, J.M. 1997. Empires of Nature and the Nature of Empires: Imperialism, Scotland and the Environment. Manchester: Manchester University Press.
- McNab, D. 1998. Earth, Water, Air and Fire: Studies in Canadian Ethnohistory. Waterloo: Wilfred Laurier Press.
- Nin Da Waab Jig 1987. Minishenhying Anishnaabe-aki: Walpole Island: The Soul of Indian Territory. Walpole Island: Nin Da Waab Jig Heritage Centre.
- Pennesi, K. 1999. Constructing Identity Through Language: Water at Walpole Island First Nation. Unpublished Master's thesis. London: The University of Western Ontario.
- People to People, Nation to Nation. 1996. Highlights of the Final Report of the Royal Commission on Aboriginal People. Canada Communication Group, Ottawa, ON.
- Petroleum History Society. *The World Wide Web*.  
url: <http://petroleumhistory.ca/archivesnews/2000/june.html>  
Accessed: March 1, 2005.
- Robinson, E.J. & M.E. Moffatt. 1985. "Outbreak Rotavirus Gastroenteritis in a James Bay Cree Community". *Canadian Journal of Public Health* 76:21-24.

- Schell, L. M. 1997. Using Patterns of Child Growth and Development to Assess Community-wide Effects of Low-level Exposure to Toxic Materials. *Toxicology and Industrial Health* 13 (2/3): 373-378.
- Simpson, L. 2001. Effects on Aboriginals from the Great Lakes Environment E.A.G.L.E. PROJECT: Sociocultural Pilot Project Technical Report. Assembly of First Nations/Chiefs of Ontario/Health Canada Partnership.
- Waldram, J.B., D.A. Herring & T.K. Young. 1995. Aboriginal Health in Canada: Historical, Cultural and Epidemiological Perspectives. Toronto: University of Toronto Press.
- Walpole Island Heritage Centre (Regna Darnell & Christianne Stephens, managing editors). 2006. E-Niizaaanag Wii-ngoshkaag Maampii Bkejwanong (Species at Risk at the Walpole Island First Nation). Heritage Centre.
- Women of Bkejwanong. 1996. *Minobimaatisiwin-We Are To Care For Her*. Position Paper from Women of Bkejwanong (later known as Akii Kwe) Walpole Island First Nation.

