

# **WATER AND ABORIGINAL PEOPLES' HEALTH: ANNOTATED BIBLIOGRAPHY**

## **Introduction**

While developing its program of research on Aboriginal peoples' access to safe drinking water, staff at the Centre for Aboriginal Health Research came across a plethora of relevant documents. Some demonstrate the link between human health and safe drinking water, while others document challenges experienced by communities relying on small water systems for their drinking water. Still others discuss policy – how we organize and manage drinking water systems, while others discussed abstract conceptual issues – how we think about drinking water. Because we here at the Centre spent so much time poring over the literature, we wanted to maximize the effects of our efforts by summarizing the literature and making it available to the public.

This annotated bibliography is by no means an exhaustive collection of literature available. Rather, it is intended as a starting point for people curious about this important public health issue in Canada. There are many reasons the publications herein were included. It may be that the document provides an overview of the issue, or that it reveals part of an Aboriginal perspective on safe drinking water. Still other publications were included as examples of the breadth of topics related to Aboriginal peoples' access to safe drinking water. It is our hope here at the Centre that you will find this annotated bibliography both interesting and useful. Should you have any questions or comments regarding this resource, please contact us at [cahr.uvic.ca](mailto:cahr.uvic.ca):

## **Peer-Reviewed Literature**

Bhatia, R. & Wernham, A. (2008). "Integrating Human Health into Environmental Impact Assessment: An Unrealized Opportunity for Environmental Health and Justice". *Environmental Health Perspectives*. Vol. 116, No 8. p.991-1000

The authors argue that because of the strong established links between health and the environment, environmental impact assessment ought to include impacts on human health. Their arguments are based on US policy, particularly on the National Environmental Protection Act, and so are directly applicable there, but there is much higher level conceptual discussion which creates mental space for integrating environment and health.

Blackstock, M. (2001). "Water: A First Nations' spiritual and ecological perspective". *B.C. Journal of Ecosystems and Management*. 1(1): 2-14.

The author applies ethnographic methods to document First Nations concerns and perspectives about water. It both "explore[s] First Nations' ecological and spiritual perspectives on freshwater and, secondarily, to briefly compare their Traditional Ecological Knowledge (TEK) to Western science's ecological perspective on water" (p.3). For many Indigenous cultures of the Northwest Coast of North America, water symbolizes the whole of creation and connects all other living things. Water is a living being with a spirit, and First Nations have cultural and spiritual connections to their waters. From this relationship emerge values about the good and appropriate usage of water. "From a Western perspective, water is a part of the physical environment that significantly affects how well the living organisms function in an ecosystem" (p.11). Water's place in nature is due to its chemical and molecular properties, not its spiritual properties. Water is not alive; it is matter which interacts with flora and fauna in the ecosystem. Contrasting these two modes of thought generates several questions for Western science and educational institutions, including: should water be considered biotic? and Is there any pure, non-organic water in the ecosystem?

Borchardt, M. A., Chyou, P-H., DeVries, E. O. & Belongia, E. A. (2003). "Septic System Density and Infectious Diarrhea in a Defined Population of Children". *Environmental Health Perspectives*. 111(5): 742-748.

This paper describes an epidemiological study on the impacts of septic system density on the incidence of diarrhoea in children in a developed country setting. Results indicate that septic system density contributes to the presence of fecal enterococci in household wells and represent a public health risk. While it is strongly rooted in a biomedical model and aimed at epidemiologists and policy makers in public and environmental health, it is useful for demonstrating the importance of wastewater management to community health. It is particularly relevant as it deals with ground water wells as a water source, given the importance of wells in the delivery of drinking water to many First Nations.

Borrows, J. (1997). "Living Between Water and Rocks: First Nations, Environmental Planning and Democracy". *The University of Toronto Law Journal*. 47(4): 417-468.

This legal analysis uses a case study to illustrate that North American democracies have inherent barriers inhibiting Indigenous participation in environmental decision-making. The author argues for stronger Aboriginal participation in environmental planning and management in Canada and takes issue with the federalist structure which minimizes First Nations opportunities to participate in governance. Existing institutions enable the exploitation of the environment for the economic gain of the few, based on the mythology that humans are separate from and masters of the natural environment. In contrast, Borrows emphasizes that "the viability of our settlements requires that our ideologies and decision-making structures take account of the fact that we are embedded in nature" (p.422). This position points to an important role in environmental governance

for Indigenous peoples as representatives of societies which have at times successfully developed organizational structures which promoted and maintained harmony with nature (though this reasoning does not preclude or replace the more fundamental moral imperative for decolonization of Canada's institutions and social structures).

Davies, J-M. & Mazumder, A. (2003). "Health and environmental policy issues in Canada: the role of watershed management in sustaining clean drinking water quality at surface sources". *Journal of Environmental Management*. (68). p. 273-286.

The authors of this article discuss a multi barrier perspective on drinking water protection which includes built in redundancies to water treatment facilities and source water protection. It includes clear statements about the link between source and tap water quality, suggesting that cleaner surface source waters result in less acute health risks associated with using that water for drinking, cleaning, and bathing. This article also discusses the various water borne pathogens which pose risks to human health, including: viruses, bacteria, disinfection by-products, chemical contamination and cyanobacteria. Of particular relevance to First Nations, the article discusses the challenges specific to small water systems in BC, such as lack of economies of scale, land use decisions based on extraction of natural resources, and lack of watershed protection.

"Nowhere does the link between human health and the environment manifest itself more strongly than our reliance on fresh clean drinking water" (p. 273).

Ennis-McMillan, M. C. (2001). "Suffering from Water: Social Origins of Bodily Distress in a Mexican Community". *Medical Anthropology Quarterly*. 15(3): 368-390.

Ennis-McMillan performed an ethnographic analysis of what it means to "suffer from water" in a Mexican community from a critical medical anthropological perspective. It emphasizes that water *scarcity* in the form of the inability to access water for domestic purposes leads to a sense of hardship just as water *quality* can make one ill, though these hardships do not necessarily match up with epidemiological understandings of illness. "While the community discourse on suffering from water does not correspond to biomedical categories of illness, it does speak to the physical and emotional hardships and the social conditions that limit residents' access to an adequate supply of domestic water. By taking a broad view of water-related suffering, the study reveals some of the efforts made by people to address what they consider to be the social origins of their bodily distress" (abstract). The author emphasizes the limitations of a biomedical model in addressing the scope of human suffering which arises when safe drinking water is lacking and the significance of the psychological stress and socio-economic outcomes associated with water scarcity which unduly stress the human body.

Ermine, W., Nilson, R., Sauchyn, D., Sauve, E., & Smith, R. Y. (2005). "Isi-Askiwan – The state of the land: Summary of the Prince Albert Grand Council Elder's forum on climate change". *Journal of Aboriginal Health*. 2(1):62-72.

Ermine et al outline an Indigenous knowledge translation methodology (Elder's forum) as it is applied to discussion on climate change impacts on population health in the Prince Albert Grand Council region of Saskatchewan. First Nations Elders noted the connections between the natural and social environments in their communities. First Nations perspectives on the natural world and human beings' place in it can enhance western research, regardless of whether First Nations findings differ from or support western observations. The authors also take care to emphasize that the application of Indigenous methodologies and philosophies requires no external validation from western scientific paradigms; each world view bears equal weight.

Ford, T. E. (1999). "Microbiological Safety of Drinking Water: United States and Global Perspectives". *Environmental Health Perspectives*. Vol. 127 Supplement 1: Reviews in Environmental Health pp.191-206.

Examines availability and limitations of data available of water-borne disease. Statistics of water-borne illness understate the global burden of infectious diseases from contaminated water. This paper establishes the need for concern for the future microbiological safety of drinking water across the world with the increased survival strategies of pathogens. Although the technology to minimize risk through a multi-barrier approach is available generally resources are not adequate, as this method is costly, and public misconception about water as a resource has led to the undervaluation of water. To ensure microbiological safety of water the authors of this study outline some critical needs. First, there must be a "more realistic valuation of water...[requiring] better education on the value and limitations of the resource" (p. 201). Maintaining knowledge as a key issue the study explores the need for better monitoring and surveillance systems, from community to global in scale, to increase the understanding of the widespread economic and health consequences of waterborne disease. Moreover the need for predictive models is recognized with resilient bacteria leading to resurgent or emerging diseases. Lastly the study finds that population susceptibility must also be reassessed; especially in rural areas and developing communities where carefully thought out alternative intervention programs are necessary in addition to improved water treatments.

Havelaar, A. H., de Hollander, A. E. M., Teunis, P. F. M., Evers, E. G., van Kranen, H. J., Versteegh, J. F. M., van Koten, J. E. M., & Slob, W. (2000). "Balancing the Risks and Benefits of Drinking Water Disinfection : Disability Adjusted Life-Years on the Scale". *Environmental Health Perspectives*. 108(4): 315-321.

This study is typical of a biomedical perspective on the management of health risks. The authors evaluate the usefulness of DALYs (Disability Adjusted Life Years) for measuring the benefits and risks of drinking water disinfection. They concluded that while the use of DALYs does allow for explicit measurement and comparison of the health risks and benefits of water treatment, the vast amount of raw data required to make the measurement credible renders the use of DALYs infeasible in many situations.

Hellard, M. E., Sinclair, M. I., Forbes, A. B., & Fairley, C. K. (2001). "A Randomized, Blinded, Controlled Trial Investigating the Gastrointestinal Health Effects of Drinking Water Quality". *Environmental Health Perspectives*. 109(8): 773-778.

This study, done in Melbourne, Australia, tests for waterborne disease in a major centre with limited water treatment (chlorination only), which comes from a protected source. Found no evidence of waterborne disease in Melbourne - source protection is largely adequate. This study was conducted in Melbourne, Australia to investigate whether "microorganisms in a surface water supply with minimal treatment [chlorination only] play a significant role in gastroenteritis in the community" (p. 773). The Melbourne Water Quality Study concluded that, with no discernable difference between study groups, in Melbourne waterborne pathogens do not play a major role in gastroenteritis as "removal of microorganisms by point-of-use water treatment made no discernable difference to the rate of illness" (p. 776). As such the study concludes that simply reducing the total coliform count in a water supply does not have beneficial health outcomes. These findings shed some light on the controversial international issue of the protective health benefits of high disinfectant residuals in distribution systems. Although, this Melbourne study is in direct contrast with other similar studies conducted in Canada but the authors note that this difference is most likely due to the fact that the Melbourne catchment, while not pathogen free, is comparatively well protected from human and animal fecal pollution.

Hinwood, A. L., Sim, M. R., Jolley, D., de Klerk, N., Bastone, E. B., Gerostamoulos, J. & Drummer, O. H. (2003). "Hair and Toenail Arsenic Concentrations of Residents Living in Areas with High Environmental Arsenic Concentrations". *Environmental Health Perspectives*. 111(2): 187-193.

Although surface soil and groundwater have been found to contain high levels of Arsenic, the long-term health outcomes of such exposure have not been fully investigated. In this study the authors seek to compare the difference in these measures of environmental source of exposure and investigate the different risk factors for increased hair and toenail arsenic concentrations in exposed populations. Both toenail and hair arsenic concentrations are found to have increase in a dose-response relationship with environment arsenic concentrations, although the authors recognize the existence of possible confounding factors and possible problems with noncompliance and nonparticipation. Additionally, of importance is that "both drinking water and residential soil were significant predictors" of arsenic concentrations, more so than local environmental exposure (p. 191). The study also notes that children had higher arsenic concentrations than their adult counterparts.

Juranek, D. D. & Mac Kenzie, W. R. (1998). "Drinking Water Turbidity and Gastrointestinal Illness". *Epidemiology*. 9(3): 228-231.

The authors of this review explain that identical water treatment systems will produce varying qualities of drinking water depending on the source water, a point emphasized by the multi-barrier approach newly espoused by many researchers and policy makers.

Though written in the context of US cities and small towns, provides an overview of the relationship between drinking water quality and gastrointestinal illness that is easy to follow. In this study the authors stress the need for concern over the safety and quality of drinking water as more occurrences of waterborne disease outbreaks arise in communities where water treatment meet with regulations. Recognizing that not all drinking water is created equal, regardless of regulations, the authors review several American studies in order to reveal the myriad of factors which influence the quality of drinking water. It is surmised that there are many places in which error can be introduced and the final quality of drinking water compromised. Water quality is a dynamic interplay as everything from the "type and amount of pollutants commonly present in a community's source of water (river, lake, well), the type and condition of water treatment and monitoring equipment available at a treatment plant, and the training and skill of the water treatment personnel" is involved and can compromise the water quality (p. 228). The authors reveal that this complex situation is most often exacerbated in small and rural communities where communities can exert less control over these aspects whether it be due to limited selection of source water, lack of funding for new treatment equipment and personnel, or recontamination from deteriorating pipes. The study goes on to investigate the correlation between turbidity and gastrointestinal events and the prospect of this relationship as a tool. However, the results are inconclusive and the need for further investigation is stressed.

Kindzierski, W. B. & Gabos, S. (1996). "Health Effects Associated with Wastewater Treatment, Disposal and Reuse". *Water Environment Research*. 68(4): 818-826.

This literature review spans studies in numerous countries, including: Canada, Germany, United Kingdom, Egypt, Saudi Arabia, the Philippines, and Bangladesh, providing a broad overview of the knowledge base surrounding health effects of wastewater treatment on plant workers as well as the general public. Many pathogens and chemical contaminants are studied in the reviewed literature, ranging from cryptosporidium to arsenic, from coliforms to nitrates. This is a helpful introduction for the non-expert into the range of risks that water and waste water treatment systems protect communities from.

Parkes, M., Panelli, R., & Weinstein, P. (2003). "Converging Paradigms for Environmental Health Theory and Practice". *Environmental Health Perspectives*. Vol. 111, No. 5. p. 669-675.

In this commentary, authors argue for research integrating social and biological sciences in order to inform the development of environmental health practices. The article first outlines key concepts of both conventional environmental health and an ecological approach to human health, highlighting topical areas in which the two disciplines are complementary. Environmental health tends toward understanding, in biomedical terms, the effects of direct environmental factors, such as contaminants, on an individual's physical health, though recently more attention has been paid to socio-economic dimensions of environmental health. As a science, ecology is better able to explore the networks of interactions linking individuals to their communities and environments,

allowing facilitating the study of hazards which are distanced from their negative effects either spatially or temporally. These sciences have been converging in research and policy for many years, contributing to the emergence of participatory action research methods as a means of responding to environmental health challenges.

Peace, T. & Mazumder, A. (2007). "Tracking Patterns of Enteric Illnesses in Populations and Communities". *Environmental Health Perspectives*. Vol. 115, No. 1. p. 58-64

This innovative inquiry proposes a new method for tracking enteric illness using provincial health records, highlighting the importance of water quality on health. With enteric illness caused by contaminated sources of food and water being a worldwide health concern, it is essential that there be an effective means of tracking the incidence and severity of such outbreaks. This study explores the novel method of utilizing administrative databases for medical visits and services as a resource to "track patterns of environmental and other health issues, test hypotheses, and develop epidemiologic models of prediction" (abstract). Using the Medical Services Plan (MSP) database of BC, Canada the study explores and determines the best sources of data, filters to ensure robustness, and external factors to be considered. The method determined is not only highly reliable, as its data has been shown consistent with known outbreaks, but also offers further insight as it produces patterns unobtainable through conventional methods. Most importantly the study is of significance as this method has global implications for tracking illnesses, such as enteric illness, at the population level since most medical insurance agencies collect the necessary data.

Prüss, A., Kay, D., Fewtrell, L., & Bartram, J. (2002). "Estimating the Burden of Disease from Water, Sanitation, and Hygiene at a Global Level". *Environmental Health Perspectives*. 110(5): 537-542.

Authors of this study "estimated the disease burden from water, sanitation, and hygiene at the global level" (abstract) using the disability-adjusted life year (DALY) as a measure. Many pathways from water to individual health were included in the authors' definition of a risk factor, including: consumption of drinking water; lack of water for personal hygiene; and, use of contaminated water for agriculture or cleaning. This study estimates that lack of safe water and inadequate sanitation are responsible for 4% of all deaths yearly. Because data used for this estimation come from intervention studies, authors conclude that these deaths are largely preventable, making drinking water and sanitation a public health issue of both high priority and high impact. The authors also call for refinements of their methods for use at national or even more disaggregated levels to assist in the development of policy and interventions.

Turner, N. J., Davidson-Hunt, I. J., & O'Flaherty, M. (2003). "Living on the Edge: Ecological and Cultural Edges as Sources of Diversity for Social-Ecological Resilience". *Human Ecology*. Vol. 31, No. 3. pp. 439-461.

This paper explores the importance of ecological and cultural edges and their implications for Aboriginal peoples residing in these transitional areas. The authors outline how both ecological and cultural edges enhance resilience and adaptive capacity by providing an increasingly diverse range of ecological and cultural resources from which the inhabitants of the land can draw upon. Aboriginal populations have long known of these benefits and their situation near water bodies has not singularly been about access to water but also about the increased capital offered through the access to different ecosystems offered by these water bodies. These edges offer access to rich sources of food and culturally important sites - such as intertidal zones, lagoons, estuaries and rocky headlands. This cultural knowledge about the importance of ecological edges has led Aboriginal populations to intentionally seek out and actively create, maintain and emulate edges as key facets of their livelihood and community health.

### **Grey Literature**

British Columbia. Office of the Auditor General. (1999). Protecting Drinking Water Sources. <http://www.bcauditor.com/pubs/1999?page=2> (accessed Sept. 18 2009)

The office of the auditor general of British Columbia recognized the long term costs (in terms of more intensive water treatment and increased health risks) of failure to protect water sources, and prepared this report on the provincial government's policies protecting drinking water and source waters in the province. Though policy analysis is no longer timely, chapter five contains helpful information on the challenges faced by small water systems in BC.

British Columbia. Office of the Provincial Health Officer. (2008). Progress on the Action Plan for Safe Drinking Water in British Columbia. Ministry of Healthy Living and Sport: Victoria, Canada.

This document contains limited information of specific to Aboriginal peoples' drinking water; it reports on the BC government's progress in implementing the 2002 action plan on safe drinking water, a plan which does not apply to the First Nations reserves. It includes content on water system assessment and small water systems, as well as discussion around safe drinking water as a public health issue. Of particular relevance to First Nations is the section on drinking water quality in First Nation communities. Section 1: Public Health Protection provides aggregated data on the frequency and duration of boil water advisories (BWA) on reserves and in other BC communities. The report acknowledges that prior to ten years ago, BWAs were seldom formally reported, which may be factor in explaining why reserves had no reported BWAs lasting more than ten years while numerous other small water systems across the province have experienced them.



Canadian Council of Ministers of the Environment (CCME). (2004). From Source to Tap: Guidance on the Multi-barrier Approach to Safe Drinking Water. Available online at: [http://www.ccme.ca/assets/pdf/mba\\_guidance\\_doc\\_e.pdf](http://www.ccme.ca/assets/pdf/mba_guidance_doc_e.pdf). Last Accessed September 22, 2010.

This document is the companion piece to a 2002 position paper by the CCME also called From Source to Tap. It deals with a variety of considerations for the implementation of a multi-barrier approach to drinking water protection, from policy development to research, from source water protection to water quality monitoring. The authors explain that the goal of a multi-barrier approach is to “reduce the risk of drinking water contamination and to increase the feasibility and effectiveness of remedial controls or preventative options” (p. 15). Another goal of the multi-barrier approach is to ensure the sustainability of water supply systems. The document outlines the benefits of such an approach to water quality management: “better public health protection, a reduction in healthcare costs, better management of water treatment costs, and, indirectly, increased environmental protection” (p.16-17). A related notion that is not addressed by the authors (who remain silent of First Nations drinking water crises) is that a multi-barrier approach is an integrated means of managing water quality, which will be difficult to achieve under the current patchwork arrangements currently governing First Nations water quality.

Centre for Aboriginal Health Research (CAHR). (2012). Crisis on Tap: Seeking Solutions for Safe Water for Indigenous Peoples. University of Victoria: Victoria, British Columbia <http://cahr.uvic.ca/programs-research/publications/>

The Centre for Aboriginal Health Research has produced a book bringing together materials from its program of research on safe drinking water. It contains information on knowledge translation, introduction to issues of safe drinking water from provincial, national, and international contexts, papers written by conference presenters, and a report on the Indigenous Water Ways workshop series of summer 2010. This publication will be a useful starting point for students and community members interested in this topic, as well as for university-based researchers desirous of learning more about Aboriginal peoples’ perspectives on safe drinking water.

First Nations Regional Longitudinal Health Survey (RHS). (2005). First Nations Regional Longitudinal Health Survey (RHS) 2002/03: Results for Adults, Youth, and Children Living in First Nations Communities. First Nations Health Centre: Ottawa, Canada.

As the only large-scale data collection project governed, implemented, analyzed, and published by First Nations in Canada, this survey represents a tremendous leap forward in Aboriginal health research. The RHS is based on traditional First Nations interpretations of health and well-being, as evinced by the broad range of indicators measured. Chapters focus on such topics as demographics, language & culture, chronic illnesses, and

community wellness. The RHS also includes a chapter on housing and living conditions which includes data on First Nation perceptions of drinking water quality in their communities. One third of respondents considered their water unsafe to drink, though most individuals who draw their own water from a surface source consider their water safe.

Four Arrows. (2010). "Canadian Government Introduces Law to Regulate First Nation Water Delivery, AFN Calls for "Real Action": A Four Arrows Summary". May 28, 2010 Edition.

This newsletter reports on First Nations' reactions to Bill S-11 and critiques the new drinking water legislation on the basis of its efficacy and legality. The author explains that a major concern is that the Bill will allow the Ministry of Indian and Northern Affairs to set regulations on water quality, treatment, and management which overrule band bylaws without parliamentary oversight. This represents an attack on First Nations sovereignty and self-determination. Other failings of Bill S-11 are that it does not address the capacity gap in providing for infrastructure, training, or support for First Nations newly liable for water quality, and that it does not address the 'root problems' leading to unsafe drinking water such as lack of control over land use near water sources and lack of financial resources for operating and management of existing infrastructure. The article also conveys a general disappointment that the government decided to pursue the legislative option outlined by the expert panel which was the least desirable to First Nations on the basis that it was the simplest to enact.

Health Canada. (2010). First Nations, Inuit, and Aboriginal Health: Drinking Water and Wastewater. Available online at: [http://www.hc-sc.gc.ca/fniah-spnia/promotion/public-publique/water-eau-eng.php#how\\_many](http://www.hc-sc.gc.ca/fniah-spnia/promotion/public-publique/water-eau-eng.php#how_many). Last accessed November 12, 2011.

This website contains information on Health Canada's policies and programs regarding drinking water in First Nations communities, and is a useful starting place for learning more about how drinking water is managed and public health protected on-reserve. It explains that "responsibility for ensuring safe drinking water on reserves is shared between First Nations communities and the Government of Canada" and describes the roles of Indian and North Affairs Canada, Health Canada, and Environment Canada in the provision of drinking water in First Nations communities. It also contains links to additional resources, including the Guidelines for Canadian Drinking Water Quality. Another useful feature of this website is a count of First Nations with a drinking water advisory, updated every few months.

Indian and Northern Affairs Canada. (2003). Summary Report. National Assessment of Water and Wastewater Systems in First Nations Communities. Ottawa: Indian and Northern Affairs Canada

This report describes the state of First Nations water treatment and waste water systems (as of 2003) as well as steps taken by the federal government to improve First Nations

access to safe drinking water. The 2003 assessment enumerated 761 water and 482 wastewater systems servicing 5 or more homes in First Nations communities. There were also over 90 municipal-type-agreements (MTAs) enabling First Nations to purchase drinking water and wastewater services from municipalities, which are required to meet provincial drinking water standards. Of those 761 water systems, 75% posed medium or high risk of negatively impacting drinking water quality. This assessment resulted in several recommendations to improve First Nations access to safe water and wastewater systems, including: regional action plans jointly developed by First Nations and the federal government; an operations & maintenance program for small/rural systems which includes both preventive and emergency maintenance components; and, source water protection policies and practices developed between First Nations, municipalities, provinces, and the federal government.

Indian and Northern Affairs Canada. (2010). First Nations Water and Wastewater Action Plan Progress Report, April 2009-March 2010. Available online at <http://www.ainc-inac.gc.ca/enr/wtr/wap-eng.asp>. Accessed Sept. 15, 2010

This government report documents changes – including overall improvements - to First Nations drinking water systems since March, 2009. Of particular note was that the proportion of qualified water system operators had decreased (from 64% to 60%), following a substantial increase the previous year (from 47% to 64%). Available at this website are earlier progress reports as well, which are helpful in mapping the evolution of First Nations drinking water systems since 2006, when Indian and Northern Affairs Canada initiated a comprehensive plan for ensuring First Nations access to safe drinking water.

Institute on Governance. (2009). Summary Report of the Impact Analyses of the Proposed Federal Legislative Framework for Drinking Water and Wastewater in First Nations Communities. Institute on Governance: Ottawa, ON

This report brings together the 10 analyses regarding the impacts of Bill S-11 on First Nations across Canada. The authors make clear that the government has not met its requirement to consult with First Nations in the development of new drinking water legislation. They also highlight the resource gap as a major barrier to the successful implementation of Bill S-11, as the band offices which would be made liable for the provision of drinking water often lack the resources to build, manage, and operate the systems the new standards would necessitate. Many regional reports “evinced a willingness to work with the federal government on water-related issues through jointly designed processes”. The authors further point out that First Nations concerns for their water extend beyond that which could be addressed through a drinking water regulatory scheme.

Mitchell, L. & Edgar, L. (2009). “Summary Report – British Columbia Region (Victoria): Engagement Session on the Development of a Proposed Federal Legislative Framework for Drinking Water and Wastewater in First Nation Communities”. Institute on Governance: Ottawa, Canada

This report includes a useful summary of policy developments for First Nations drinking water over the past ten years, and outlines the regulatory gap surrounding First Nations drinking water. The most troubling statement reported from the engagement session was on Bill S-11 as 'enabling' legislation, which transfers the authority to set regulations with the Ministry of Indian and Northern Affairs, handing that Minister considerable authority over an issue of huge importance to First Nations, and removing the details of First Nations drinking water standards from political and democratic processes. Other major concerns are: funding, a 'one size fits all' approach for BC's diverse communities, lack of municipal participation at meetings, and the potential for mandatory use of chlorine. Participants are generally unhappy with the way the "engagement sessions" (which were initially marketed as consultations) were handled. INAC personnel were over-represented, there was little notice given to Chiefs and Elders, the events conflicted with Bands' AGMs, and were tightly regulated by topic etc.

National Aboriginal Health Organization. (2002). Drinking Water Safety in Aboriginal Communities in Canada. Brief. Available [http://www.naho.ca/english/pub\\_environmental.php](http://www.naho.ca/english/pub_environmental.php). Accessed September 22, 2009

This report discusses the state of drinking water in First Nations communities and outlines the relationship First Nations have with the federal government, including the various ministries and departments that play a role in the provision of safe drinking water to First Nations on reserve. It highlights that not all Aboriginal communities have access to federal funds, naming Métis and Innu communities suffering from poor water quality. The report also highlights challenges in the data on Aboriginal peoples' access to safe drinking water and water and sewage systems, including issues with the definition of 'community water system'.

National Aboriginal Health Organization. (2003). Canada's Environment Agenda and Implications for Aboriginal Peoples. Briefing note. Available [http://www.naho.ca/English/pub\\_environmental.php](http://www.naho.ca/English/pub_environmental.php). Accessed September 22, 2009

This briefing note on the 2003 federal budget outlines its impacts on the environmental health of Aboriginal peoples. It laments inadequate resources for First Nations housing, water, and waste water systems, as well as lack of support for increasing Northern communities' research capacity and funding for climate change research. It also points to beneficial impacts including the creation of National Parks in northern areas and the allocation of funding for traditional knowledge research and preservation.

Senate of Canada. (2010). Bill S-11: An Act respecting the safety of drinking water on First nation lands. First Reading, May 26, 2010. Available online at <http://www.parl.gc.ca>. Last accessed August 29, 2010.

Bill S-11 is a piece of 'enabling legislation' which is meant to clear the road for more detailed water policy development. The upshot of this bill is that in permitting INAC the legal right to develop such policy, it runs the risk of enabling INAC to overrule First Nations bylaws and attacks the sovereignty of individual First Nations. In order to facilitate 'incorporation by reference', the bill allows the Minister of INAC to "confer any

legislative, administrative, judicial or other power on any person or body”, including assigning enforcement of drinking water standards to provincial bodies. The bill specifies 23 distinct 'powers' that the Minister of INAC would have once the bill is passed, many of which are demonstrable violations of First Nations' rights to self-determination.

Further concerns raised by the wording of this bill: 1) that the definition of a drinking water system does not include any reference to source waters, which are regarded in the multi-barrier approach (now a core concept in water quality management) as integral to the water system; it allows the minister of INAC to enter into any agreement with any province, corporation, or other body for the administration and enforcement of drinking water standards, essentially conferring on the Minister the ability to force First Nations into agreements with corporations for the privatization of drinking water systems; the bill specifically states that it prevails over any laws or bylaws created by First Nations to the extent of any inconsistency; the bill eliminates federal liability for drinking water, and limits the liability of provincial bodies as well, causing the full burden of legal and financial liability to fall upon First Nations.

Note: this first reading of the bill was so poorly received by the First Nations of Canada that a new Indian and Northern Affairs minister (John Duncan) has promised to involve First Nations in rewriting the bill. (See Winnipeg Free Press article.)

Swain, H., Louttit, S., Hrudehy, S. (2006). Report of the Expert Panel on Safe Drinking Water for First Nations. Ottawa: Indian and Northern Affairs Canada

As part of the federal process for developing water quality regulations for First Nations reserves, an expert panel was formed which traveled the country consulting with First Nations. These activities resulted in the creation of this multi-volume report, with volume one outlining what the panel heard over the course of their consultations and presenting three general options for proceeding with drinking water regulations. From the perspective of First Nations, the obstacle to safe drinking water is resources (financial, capital, human), not regulations – many fear that their needs will not be met by regulation alone. There was also concern that existing processes for procurement of funds do not maximize efficiency and efficacy, and that 'economic leakage' limits the amount of funding that ultimately reaches communities. The expert panel proposed three basic framework options for proceeding with drinking water regulations: creating new federal legislation, reference to existing provincial statutes, or founding the framework upon the customary law of First Nations. It should be noted that the option the federal government ultimately decided to pursue was the option found by the panel to be the least acceptable to First Nations, creating a new regime based on provincial statutes.

Union of British Columbia Indian Chiefs (UBCIC). (2010). Water Act Modernization Initiative: Submission to the Ministry of Environment. Union of BC Indian Chiefs: Vancouver, Canada. Available online at: [http://www.ubcic.bc.ca/News\\_Releases/UBCICNews04301001.htm](http://www.ubcic.bc.ca/News_Releases/UBCICNews04301001.htm). Last accessed September 22, 2010.

The Union of BC Indian Chiefs prepared this document in response to the discussion paper of the Water Act Modernization process that is underway in British Columbia. It criticizes the WAM from the context of Aboriginal Right and Title, with reference to Aboriginal peoples' longstanding relationship to the lands and waters of the province. The bulk of the paper is founded upon legal rights and responsibilities and attacks the province's ability to draft legislation of this nature without prior consultation and accommodation of constitutionally-enshrined rights of Aboriginal people in Canada. This paper brings up many other concerns with the proposed changes to the Water Act, including: that it contradicts New Relationship commitments; that it contravenes the rights set out in the UN Declaration on the Rights of Indigenous Peoples, which the federal government endorsed in the fall of 2010; that the principles espoused in the WAM process are problematic in light of Aboriginal Right & Title; that the principle of flexibility leaves the province the option of accommodating businesses' needs without first providing water to the natural environments dependent on water flows; and, lack of recognition and respect for the potential of Indigenous knowledge to contribute to efficient water management in the province. The UBCIC opposes the further commoditization of water; and, prioritizing water use by seniority of licences issued on the basis of economic activity is unjust and does not support a cultural of water conservation or the view that water and the natural systems it supports have intrinsic value.

United Nations Development Programme (UNDP). Water Governance Facility. (no year). "Decentralisation of Water Decision Making". *SIWI Water Issue Series*. No. 1. Stockholm International Water Institute: Stockholm, Sweden

This issue asserts that water governance should be decentralized as "water resources management takes place in unique, complex socio-economic contexts and solutions need to be realistic" (p.1). Moreover the authors argue that "local actors often know the challenges they face best" and that water governance should be arranged on the scale of water sheds rather than along the often arbitrary political borders.

United Nations Children's Fund (UNICEF) & World Health Organization (WHO). (2009). Diarrhea: Why children are still dying and what can be done. WHO Press: Geneva, Switzerland.

Diarrhea is a major threat to child health, particularly in Asia and Africa. Currently, 60% of children with diarrhea in low- or middle-income countries receive treatment, and is the second most common cause of death in children under 5 across the world. This report provides useful statistics on the incidence of diarrhea in countries around the world and in articulating the link between unsafe drinking water, lack of sanitation facilities, and the occurrence of diarrhea. It also presents a seven-point treatment plan designed for implementation in LMICs.

Wilson, J., Aramini, J., Clarke, S., Novotny, M., Quist, M., & Keegan, V. (2009). "Retrospective Surveillance for Drinking Water-Related Illnesses in Canada, 1993-2008: Final Report". Novometrix: Moffat, Ontario, Canada.

This report surveys the waterborne disease events (WBEs) from 1993-2008. Data were obtained from interviews with representatives from public health regions across Canada. Data demonstrate that multi-barrier approaches to drinking water protection are more effective: only 15% of WBEs occurred where water systems used both filtration and disinfection. Also, most WBEs occur in small or medium-sized communities; over three quarters of the recorded WBEs occurred in communities under 10,000 inhabitants (And more than half occurred in communities of fewer than 1000 inhabitants). The median duration of a WBE was 45 days. Because of the data collection method (ie: interviewing provincial health authority representatives), the data do not include any WBEs in First Nations communities. The report also makes the case for source water protection: in 84% of WBEs where the source water is surface water, the water source was unprotected at the time of the outbreak.

Winnipeg Free Press. (2010). "Minister Agrees Drinking Water Bill is Flawed, Promises First Nations Can Help Rewrite It". News article, November 12, 2010. In Four Arrows (2010). "UN Rapporteur Warns Against Treating Declaration of Rights as Non-Binding; Water, Water... But Not a Drop to Drink; And in the North, Aboriginal-Free Devolution?". November 16, 2010 edition. Available online at: <http://www.maqex.com/eas/ImplementDeclaration.pdf>. Last accessed December 14, 2010.

This brief article explains Aboriginal leaders' concerns about Bill S-11 and outline recent events – namely, the (then) new INAC minister John Duncan admits the wording of the bill is flawed and avows First Nations will be involved in re-writing it. However, Mr. Duncan's statements that the House of Commons is best suited to identifying current problems with the bill (and the associated assumption that the senate will pass it) suggests that the minister is merely assuaging senators' concerns so that it will be passed in its current state.