

**WATER TALK:
AN ANALYSIS OF MONOPOLIES OF KNOWLEDGE,
RISK COMMUNICATION AND POTABLE WATER
POLICY IN BRITISH COLUMBIA.**

by

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ABSTRACT

Few in Canada were concerned about potable water until the Walkerton tragedy. Authorities at all levels have since pledged to strengthen water protection. British Columbia passed legislation intended to ensure the safety of its supply from “source to tap”, and many municipalities have planned upgrades to their systems. Nevertheless, increasing numbers do not drink tap water but use bottled or filtered water instead. Why?

Perception of risk depends on how, and by whom, it is communicated.

Public practices indicate that drinking water policy and perceptions concerning risk are disconnected. Harold Innis’ “monopolies of knowledge” and William Leiss’ writings on the domination of nature and risk communication illustrate why this disconnect exists and Marshall McLuhan’s “laws of media” are a method for identifying potential reversals of expected outcomes.

This thesis addresses risk communication, analyses water policy and legislation, presents the results of a user survey, and makes recommendations for policy formation.

Keywords:

Water, Bottled Water, Tap Water, Drinking Water Survey,
British Columbia, Canada, Monopolies of Knowledge, Laws of Media,
Risk Communication, Risk Management, Public Policy, Legislation

DEDICATION

To my ever supportive spouse Wendy King and our children:
Jane, Jared, Brandon & Hailey, and to our patient extended family without whom this
work is meaningless.

In memory of Marilyn A. Krueger, mother, mentor and to my father Erwin
Krueger (LL) who taught me to stick with it until job is done.

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CHAPTER 1

INTRODUCTION: WATER POLICY AS COMMUNICATION

"Water and Sanitation is(sic) one of the primary drivers of public health. I often refer to it as "Health 101", which means that once we can secure access to clean water and to adequate sanitation facilities for all people, irrespective of the difference in their living conditions, a huge battle against all kinds of diseases will be won."
Dr.Lee Jong-wook, Director-General, World Health Organization.¹

1.1 How Monopolies of Knowledge, the Domination of Nature and Poor Risk Communications Practices Precipitated a Crisis: The Walkerton Tragedy

The acquisition of knowledge involves an exchange whereby a previously held notion, bias, or ignorance is exchanged for a new perception of truth. Once acquired, knowledge can be shared for the benefit of others or monopolized for one's own benefit. A prophet spreads the word; a magician never reveals the secrets of the trade. Knowledge, once acquired, is not always pleasant, can uncover errors or omissions and can reveal that which was once believed to be factual as not being true. Sharing the knowledge that something previously thought to be right is, in fact, wrong can be very difficult to admit to others, but until the knowledge is shared, nothing can be done to address the problem. The arising consequences vary with the individual's level of responsibility. Acknowledging, however, that individuals do not function in a vacuum,

¹ World Health Organization. "Water, sanitation and health links to health. Facts and figures updated November 2004." http://www.who.int/water_sanitation_health/facts2004/en/.

when individuals are charged with responsibilities that affect the well being of others, it becomes imperative that the knowledge be shared whether it is good, bad or ugly.

Monopolies of knowledge are related to the domination of nature and these, in turn, are related to risk management. In combination, there is the possibility that they can result in poor or failed risk communication and can actually precipitate ‘events’ or crises, such as the incident of potable water contamination in Walkerton, Ontario in May 2000. In this event seven people died, over a thousand were made seriously ill and today, five years later, hundreds still suffer chronic intestinal infections and pain.²

The tragedy at Walkerton was not a sudden event, but rather, developed over twenty years to become a crisis variously due to improper operation, poor management with little or no oversight, no risk assessment, no mitigation or contingency plan and haphazard communication and sharing of knowledge. Heavy rains, high run-off and cow manure leaching into the soil contributed to taking the situation from a serious event to a critical incident.

A defining characteristic of a Monopoly of Knowledge is the real or imagined belief that there are some people who know what is best for others. Economies of scale (i.e. relative to large urban and suburban populations) and threats to public health led to governments assuming control over the provision of water and sanitation, which were financed through direct public taxation, primarily at the municipal level. Treatment systems consisting of chlorination or sand filtration and distribution via large pipes were implemented. This has not changed much to this day. Unless living on a rural property

² CBC Archives. “Death on tap: The poisoning of Walkerton”. <http://archives.cbc.ca/500f.asp?id=1-70-1672-11534>.

being supplied by an individual well, the typical Canadian household is connected to the publicly funded water grid. Over time, with fewer citizens fetching water and fewer disruptions to the quantity, quality or costs of what was coming out of the tap, a dependence on the government for providing this most basic need grew into an oblivious state where, today, few people know or care to know how they are able to receive their water out of their taps. The knowledge concerning the provision of potable water has become so removed from them that few people have the expertise to question water-safe levels of chlorination or fluoridation or the risks caused by microscopic pollutants.

A potential problem has been present from the beginning of this government-public relationship. Those responsible for operating and maintaining the systems are the same people who are entrusted with administering its costs, which are financed from tax revenues (the public purse) - constituting a classic monopoly. When costs rise, they can increase the rates. The only way for the public to place a check on rate increases is to raise it as an election issue during an election. However, by communicating to the public that a failure to increase the rates would necessitate a decrease in service, thereby compromising the quantity or quality of the water supply and leading to an increased risk to public health, the officials responsible squash any possibility that the public would press for change or challenge this monopoly.

As long as an operation proceeds to most people's basic satisfaction, they will not regard that operation in detail. The fact that the publicly supplied water system has worked well enough so for so many years has led most people to what has turned out to be a false sense of security and a dangerous comfortable notion that nothing could go wrong. This has been made evident with the fact that in many communities, water supply

quality control is only one of the many functions, not the only function, of the municipal employee charged with its care.

The user of a system usually will only call an operator/contact person in the event of a lengthy disruption in the quality or provision of its service. The managers of a system (often chaired by municipal officials or appointed board members) generally will only be concerned if an operator raises a concern about their system or if large numbers of the public or other affected parties complain about the service being provided. Higher levels of authority – such as the provincial or federal governments – may also bring in new regulations that may force a change to a system's operations, governance or responsibility. However, those in places of higher authority generally have not become involved unless their respective areas of influence or responsibility have been affected. A ministry for health, for instance, would be concerned if a health crisis were indicated; a ministry for the environment would become concerned when issues of source protection or contamination came to the fore.

Prior to Walkerton, in most communities the water system had been in operation for so long many believed they had overcome water-borne diseases and chemical contaminations or that their particular system was immune to these threats. They had come to believe that they had dominion over the natural supply of water. With the absence of any apparent risk, there was nothing to really manage, and hence no thorough consideration went into assessing or communicating a risk that few believed existed.

Early commercially distributed bottled water, such as the brand Perrier or Evian, was more of a status symbol than a market response to public concerns about the water supply. Even the product names sported an air of sophistication and elegance over those

now used today, such as Natural Springs or Canadian Springs, which in comparison evoke images of safety and purity. Similarly, the home filtration market was first a niche market for those who were more concerned about filtering out the chlorine taste in the water than as a mass-market product for those wanting to filter out harmful particulate matter. Using alternatives to the public water supply was seen as a lifestyle choice, rather than as a concern about basic health and safety - or the ability of public authorities to provide it.

Until May 2000 most Canadians had no reason to examine the drinking water system in detail. In fact certain regions of the country and some areas of each province had better supplies than others, but overall, the public had faith in their public water supply. Do they still?

1.2 Water: A Study Proper to the Field of Communication

“We shall not finally defeat AIDS, tuberculosis, malaria, or any of the other infectious diseases that plague the developing world until we have also won the battle for safe drinking water, sanitation and basic health care.” Kofi Annan, United Nations Secretary-General.

“The human right to water entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses”
General Comment No. 15 (2002): The Right to Water.³

“I used to think that food and water was the key to survival, but now its food, water and communication.”⁴ Dr. Anthony Mazzarelli.

Water, as is communication, is an essential component to our very existence. It is evident that without it life would not be sustainable in any form. Yet, is water a subject

³ World Health Organization. “Water, sanitation and health links to health. Facts and figures updated November 2004.” http://www.who.int/water_sanitation_health/facts2004/en/.

⁴ Tony Regina, ‘Cooper team’ travels south to help’, *Recordbreeze.com*. September 22, 2005. http://www.zwire.com/site/news.cfm?newsid=15256875&BRD=1687&PAG=461&dept_id=41463&rfti=8.

proper to a study of communication? Marshall McLuhan believed that all human artefacts were extensions of the body and that any new thing will have four effects that operate simultaneously but to varying degrees. These four effects are McLuhan's "laws of media" and consist of a tetradic formula loosely stated as follows: A new thing will enhance something and this enhancement will also render an old thing obsolete. At the same time, something previously rendered obsolete will be recovered. Finally, pushed to its extreme limits, the new thing will reverse what it set out to enhance.⁵ There is no single tetrad for any given thing, but some parts of the tetrad are more obvious in operation than are others. The four aspects of the laws of media are revealed when they are framed as questions that can be asked about any human artefact "whether hardware or software, whether bulldozers or buttons, or poetic styles or philosophical systems."⁶

For example, animal skins enabled water to be transported and stored away from the water source and, in addition to elevating the status of the clever person who first saw the potential in the use of the hide, this use enhanced the living conditions of the group. What was rendered obsolete was in each member of the group having to go individually to the water source in order to obtain water. More difficult to determine is that which was recovered. In this case, perhaps it was an infantile, comforting sense of being able to rely on another to supply a basic need, as an infant would rely on being nurtured at the breast by its mother. A potential reversal caused by the water-bearing hide is that the condition of equality that existed when each member of the group had to go for water individually could be supplanted by a culture where certain members of the group could now be obliged to fetch water for the group. Alternatively, the ones fetching the water could

⁵ Marshall McLuhan. "Laws of Media" in *Essential McLuhan*, edited by Eric McLuhan and Frank Zingrone. (Concord, ON: House of Anansi Press Limited, 1995), 379.

⁶ *Ibid.*, 378.

attempt to create a monopoly of knowledge regarding the whereabouts of the water source and control access to it. In a worst case scenario, the water bearer could lack the knowledge of how to judge good water from bad and provide water from a questionable source, thereby compromising the health and safety of the group.

All human artefacts are also media of communication and they shape the content of the message. So what can be said of natural elements and processes? The very presence of water communicates different things and also constrains and shapes our social structures. Primitive man knew that where there was water there was food, but also knew it was a place where the hunter could become the hunted (i.e. big cats also knew that where there was water there was food). Thus one of the first social imperatives became one of control over the water – first over the animals, then over one another.

Control over fresh water has pervaded geo-political discourse since the dawn of civilization. Access to safe drinking water was no less important then as it is now, and as such, its provision is one of the primary functions of government. When a government fails in providing such a basic need, its ability to accomplish anything else is viewed with suspicion and mistrust – this is why the Walkerton Water Tragedy became a watershed moment due to the change in trust people had in governments at all levels in all regions of the country.⁷

In English, ‘Black Water’ means do not use, ‘Gray Water’ means use with caution, and ‘Potable Water’ means you can safely drink without fear - presuming your body agrees with what has become the accepted definition of the above. Terminology

⁷ Canadian Broadcasting Corporation. *The National*, Broadcast Date: June 26, 2000
Commentator: Rex Murphy, http://archives.cbc.ca/IDCC-1-70-1672-11518/disasters_tragedies/walkerton/.

plays a large part in the communication of water and, as shall be discussed, the terms employed have an effect on how the message is received. Technology plays a role as well, not only in water management, treatment, testing and delivery, but also in how these and risks to them are or are not communicated to the public.

Besides communicating the existence of a good place to inhabit, water has also been the common carrier of both written and oral forms of communication. Prior to the advent of the telegraph, modes of communication were closely linked to those of transportation.⁸ The various rivers, lakes, oceans and canals have always played critical roles in the transmission of knowledge and of culture (e.g. the Nile, Tigris, Fraser Rivers), in commerce and trade, in war and peace, and in myth and religion (e.g. River Styx, Dead Sea, Jordan River). News of the New World was brought to the Old by boat, and the waterways of this continent were the highways and railways long before Europeans 'discovered them' (or gained monopoly over them).

Water has even been used directly as a medium of literate communication. The story of Helen Keller illustrates how water was the medium that broke through barriers of blindness and deafness to connect things to language and enable communication between student and teacher.

At the well-house Sullivan placed her hand under the spout, under a cool stream of water, and spelled into the other hand the word water. "That living word awakened my soul, gave it light, hope, joy, set it free."⁹

At one depth then, water is a medium that can communicate the limits of our natural environment; deeper can be found its relation to political and social controls;

⁸ Robert E. Babe. *Canadian Communication Thought: Ten Foundational Writers*. (Toronto: University of Toronto Press, 2000), 277.

⁹ Books and Writers. "Helen Keller (1880-1968)" in *The Story of My Life* by Hellen Keller, 1903. <http://www.kirjasto.sci.fi/hkeller.htm>.

deeper still is water's role as a technical mode of communication, the first high-speed information highway enabling the diffusion of knowledge throughout the world.

This thesis will focus on communication in the formation of public drinking water policy and on the perceptions of those who are affected.

The tragedy at Walkerton was a gross failure of communications at several levels.

The Ministry of Environment knew of sporadic bacterial contamination of Walkerton's water system for many years. And it knew that the problem hadn't been solved: A testing laboratory notified it of contamination by fecal coliform bacteria in January, and again in April of this year. The ministry did not alert local residents or health authorities, nor did it take effective action to correct the problem. Even an anonymous telephone call alerting the ministry to deadly E. coli bacteria in the water system failed to achieve any effective response.¹⁰

This communication failure was echoed in the Final Report of the Panel Review of British Columbia's Drinking Water Protection Act where they noted the lessons learned in B.C. from the Walkerton tragedy. What are observed are the various references to communication.

The importance of and need for:

- A rigorous water quality *monitoring* and *enforcement* system,
- operator *training* and *certification*,
- *understanding* of the threats to groundwater from surface contaminants, particularly shallow wells,
- *immediate public notification* when *test results indicate* public health *threats*,
- *direct involvement* of the Medical Health Officer in drinking water matters,
- *clear accountability* when systems fail,
- better *coordination and communication between* health officials and environment *officials*,
- *a clearly understood public notification system* in the event of poor water quality results,

¹⁰ Elizabeth Brubaker. "Walkerton: Government's three deadly mistakes", Wednesday, May 31, 2000. National Post, <http://www.environmentprobe.org/enviroprobe/evpress/fpmay00b.htm>.

- *maintenance of a database* of water sources and systems and their monitoring results, and
- a thorough *assessment* of the environment and human *health risks* prior to proceeding with massive provincial government budget reductions in programs that affect drinking water.¹¹ [italics added]

It must be noted here that it is a particular strain of the *E. coli* (*Escherichia coli*) bacterium that poses risks to human health. Most strains of *E. coli* live in the intestines of healthy humans and animals and are benign, however, *E. coli* O157:H7 creates a toxin that can cause severe illness, have lasting effects and in some cases result in the death of the infected individual. The *E. coli* O157:H7 strain was first pegged as a threat to human health in 1982 after an outbreak of severe bloody diarrhea was linked to contaminated hamburgers and is often referred to as ‘the hamburger disease’.¹²

... The organism can be found on a small number of cattle farms and can live in the intestines of healthy cattle. Meat can become contaminated during slaughter, and organisms can be thoroughly mixed into beef when it is ground. Bacteria present on the cow's udders or on equipment may get into raw milk.

Eating meat, especially ground beef, that has not been cooked sufficiently to kill *E. coli* O157:H7 can cause infection. Contaminated meat looks and smells normal. Although the number of organisms required to cause disease is not known, it is suspected to be very small.

Among other known sources of infection are consumption of sprouts, lettuce, salami, unpasteurized milk and juice, and swimming in or drinking sewage-contaminated water.

... *E. coli* O157:H7 infection often causes severe bloody diarrhea and abdominal cramps; sometimes the infection causes nonbloody diarrhea or no symptoms. Usually little or no fever is present, and the illness resolves in 5 to 10 days.

¹¹ BC Ministry of Health Services. “Drinking Water Review Panel - Final Report.” February 2002, 6. http://www.healthservices.gov.bc.ca/protect/pdf/dwrp_final.pdf.

¹² US Department of Health and Human Services, Centers for Disease Control and Prevention, *Division of Bacterial and Mycotic Diseases*, “*Escherichia coli* O157:H7”. October 6, 2005. http://www.cdc.gov/ncidod/dbmd/diseaseinfo/escherichiacoli_g.htm.

In some persons, particularly children under 5 years of age and the elderly, the infection can also cause a complication called hemolytic uremic syndrome, in which the red blood cells are destroyed and the kidneys fail. About 2%-7% of infections lead to this complication.

... Hemolytic uremic syndrome is a life-threatening condition usually treated in an intensive care unit. Blood transfusions and kidney dialysis are often required. With intensive care, the death rate for hemolytic uremic syndrome is 3%-5%.¹³

The contamination at Walkerton occurred because one of the town's water supply wells (fed by ground water) was located in the midst of a cow pasture. This, combined with heavy rains, high runoff and a faulty chlorination system proved to be a deadly mix.

In studying the relationship of water to communication, one is drawn to seeking a more critical examination of how water policies are formed and enacted by those with power over it, as well as being drawn to observing how it is perceived and adopted by those affected by it. Through this study, the basic truth that we all vitally need water becomes a driving incentive.

1.3 Thesis Statement

“Some of the chief dilemmas of our age, both public and personal, turn on communication or communication gone sour.”¹⁴

Perception of risk depends on how and who communicates it. Perceptions vary: some believe their water is worse than it is and some believe it is better, but could both be correct? It would seem to depend on who is delivering the message of water quality and how that message is disseminated. Despite our dependence on public authorities to provide us with potable water, there is a demonstrable lack of faith in them to satisfactorily

¹³ Ibid.

¹⁴ John D. Peters, *Speaking into the Air: A History of the Idea of Communication*. (Chicago: The University of Chicago Press, 1999), 1.

fulfil this necessity and responsibility, and yet few people question the quality of bottled water from a private corporation which is under less regulatory scrutiny.¹⁵

Perhaps the most critical element of credibility for a source is the degree to which intermediaries and the ultimate recipients of the risk message believe that source to be justified in the position reflected in the message. ... The reputation of the source, in terms of past record with regard to accuracy of content and legitimacy of the process by which it was developed, will be an important influence on the way recipients view particular messages.¹⁶

Why a person would trust a private purveyor of water over a public supplier could, in part, be due to the person's assumption that there would be more avenues for communication and legal remedy dealing with a private corporation holding large assets which, in turn, could be used in large settlements for correction and restitution should the company be taken to court. Conversely, regarding a government body, as was demonstrated with the Walkerton Water Tragedy, there is the impression that there is little accountability at the legislative and bureaucratic levels and that any financial compensation would be taken from resources that could have been used to fix the water system in the first place.

At a more profound level, this lack of faith is a result of the perceived parochial manner in which water policy and regulation is formed and the ambiguous way in which risks to drinking water are communicated to the people who use and pay for it. Harold Innis might have said it is the government's "monopoly of knowledge" over public policy that disconnects the policy makers from people in both practice and perception.¹⁷

¹⁵ Committee on Risk Perception and Communication, Commission on Behavioural and Social Sciences and Education, Commission on Physical Sciences, Mathematics and Resources, National Research Council. *Improving Risk Communication*. (Washington, D.C: National Academy Press, 1989), 120.

¹⁶ *Ibid.*, 119.

¹⁷ Harold A. Innis. *Empire and Communications*. (Victoria: Press Porcépic Limited, 1986).

The way in which policy and regulations are established tends to create this monopoly of knowledge on the part of the people in positions where rests the responsibility and authority to provide this public good called potable water. This monopoly of knowledge does not go unchecked, however, as it is challenged by users who are enabled through technological advances which allow them to create their own potable water (i.e. provided they can afford it and there is adequate supply). They are also enabled through technological advances in the means of communication which allow them access to increasingly more water quality information that may or may not, however, be factual.

Paradoxically, technological advances can have a double-edged effect. They can make communication more direct or more indirect; more accessible or more inaccessible; they can be a means to empower individuals or to download responsibility onto them and they can raise people's expectations to the point where instant access to complete, unfiltered and accurate information is relied upon without concern.

The key question, why a 'disconnect' exists between public policy and the attitudes and perceptions of those whom it affects, is primarily an issue of communication of risk rather than a problem of science and technology. This thesis contends that the heart of this disconnect is found in the separation (intended or unintended) between those who operate with and within public policy and/or who seek to preserve their monopoly of knowledge, from those confronted with a changing reality as regards public policy, its formation and the communication of risk, and where they find themselves contesting the relevance and legitimacy of those operating within.

In Chapter 2, this is demonstrated by providing an explanation of what is a ‘monopoly of knowledge’, how it relates to the modern will to dominate nature and how both of these are linked to risk management and communication. This will be followed by a discussion of how monopoly of knowledge affects the public perception of risk, how it has been the de facto governing principle in Canada since the early colonial period, how it operates in water policy formation, how it persists in the public inquiry of the Walkerton tragedy and lastly how new technologies and attitudes are challenging what many consider to be ‘natural’ monopolies.

Chapter 3 begins with an examination of the question whether or not water should be considered to be a human right or a commercial commodity, followed by an exposition of drinking water policy and legislation in the Canadian context and ends with a brief rendering of the British Columbia ‘waterscape’.

Chapter 4 starts with a critique of water-risk communication practices, boil-water advisories, and then presents a critical analysis of British Columbia’s new Drinking Water Act and the recommendations of the citizen’s advisory panel that preceded it.

Chapter 5 presents the results of a 2003 SFU Survey of B.C. Residents’ attitudes and perceptions towards drinking tap and bottled water to show how the public attitudes and perceptions of drinking water are at odds with current policy and regulation.

The thesis concludes in Chapter 6, highlighting “apathy” as a major impediment to breaking our habitual inclination to accept monopolies of knowledge as natural or inevitable, followed by a presentation of a schematic for effective, equitable and efficient policy formation, governance and risk communication based on symmetrical spheres of communication. It ends with policy recommendations centred on communications and

suggested areas for future research. Appendices are in Chapter 7 and bibliographic information for the sources cited and consulted are found in Chapter 8.

1.3.1 Thesis Scope

Although specific policies and treatment systems will be examined in general terms, this thesis will not make a specific policy recommendation that can be applied in any and all circumstances, nor is it intended to favour one treatment system over another. Although national and international policy and practices will be noted where relevant, the primary focus of this research is on British Columbia and the greater Vancouver area and on a case study that reveals the larger issues.

Though very significant in developing areas of the world, the issue of gender and water will not be addressed other than to say that the burden of collecting water, often falls to women in these areas and anything that eases access to water will also ease some of the inequities that women face as noted in the International Development Research Council publication *Local Water Management*.¹⁸

Another issue that warrants attention, but is out of the scope of the thesis, is that of global inequities with regard to affordable access to safe, clean water in sufficient quantities and the role of water in international development and politics.

Though the quality and the quantity of the water supply are inextricably linked, the primary focus here will be on water quality. Similarly, wastewater or sewage treatment will not be addressed in detail.

¹⁸ David Brooks. *Water: Local-Level Management*. (Ottawa: International Development Research Centre, 2002).

Finally, the value of source protection here is taken as a given, but as it is intertwined with land use, property rights, and scientific debate, its full implications are beyond this concentration on communication of drinking water policy.

1.3.2 Literature Review

There is much written on the subject of water. A preliminary internet ‘Google’ search of the topic yielded over four million search results. In trying to narrow the sea of information, much of the relevant literature is drawn from government policy documents and legislation, policy white papers, and departmental publications found in hard copy and on various websites. Local newspaper and magazine articles were used primarily for current local information and to get a sense of prevailing attitudes as reflected in the daily media. Academic research papers in the field of hydrology were used to gain a technical understanding of ground water, risk assessment, water treatment and sanitation. Many water websites were visited and efforts made to search specifically for those that addressed issues of particular importance to British Columbians and also for those that had information on the Canadian waterscape. Much of what is written about water in hard copy trade publications has an environmental or global concentration but two in particular, *Water* by Marc de Villiers and *Whose Water is it?* a collection edited by Bernadette McDonald and Douglas Jehl have recent and relevant information on Canada put into the global context. Most of the research on the communication theory being applied in this paper was also done using texts and books written from a Canadian perspective by scholars, both past and present, from Canadian institutions.

1.3.3 Theoretical Grounding

The theoretical base of this work is drawn from three particular Canadian Communication theorists: Harold Innis for “monopolies of knowledge”, Marshall McLuhan from whom is derived the “Laws of Media”, and the early work of William Leiss on “The Domination of Nature” and his more recent writings on “Risk Communication”.

There is also a strong element of quantitative research methodology in the data gathering and analysis of the survey that was conducted as part of this project – and to a lesser degree, the informal water taste test conducted while presenting the drinking water poster that preceded this work. As data must be interpreted and put into context, qualitative research methods, such as personal interviews, were used to draw conclusions and to attempt to get details of the politics behind the policies being addressed.¹⁹

Other theoretical discourses in the field of communication that are directly present in this study include health & risk communication, emergency preparedness, political economy, political theory, critical theory and semiotics. As it is fitting to the study of water and communications there is also an ever-present ecological component – something Robert Babe notes is characteristic of the thinking of Canadian Communication theorists in general.²⁰

Finally, throughout this paper there is an attempt to delve deeper below the surface and examine the root causes of what drives the thirst for monopolies of knowledge and power, the will to dominate over nature and society, and the focus on

¹⁹ D. Silverman. *Doing Qualitative Research: A Practical Handbook*, [third edition]. (London: Sage Publications, 2002).

²⁰ Robert E. Babe, *Canadian Communication Thought: Ten Foundational Writers* (Toronto: University of Toronto Press, 2000), 313.

managing the risks to oneself at the expense of another. This, in turn, gives rise to positive notions where pure self interest on the one hand, or complete lack of regard for the individual on the other, can transcend the extremes and re-orient for the common good rather than for the good of a select few.

CHAPTER 2

MONOPOLIES OF KNOWLEDGE AND HOW THEY AFFECT CANADIAN GOVERNMENT

The following chapter explores Harold Innis' concept of "monopolies of knowledge", how it has been the foundation of governance in Canada since before Confederation, how it relates to the notion of "the domination of nature" as expressed by Bill Leiss and how it was a contributing cause of the Walkerton water crisis of May 2000 and negatively affected successful risk communication and mitigation practices, and where it will also seek to determine if the Walkerton Inquiry broke this monopoly or further entrenched it in the formation of drinking water policy. This chapter will also present some of the technical advances and changes in practice that exist today found with the public in general, and consider the advances and changes which represent a de facto challenge to the practice of top-down water management as well as a challenge to the notion fostered by many in authority: that water and its provision are to be considered a "natural monopoly" and dispute whether such a "natural monopoly" does exist.

2.1 What is a Monopoly of Knowledge?

The use of the term "monopoly of knowledge" was used by Harold Innis to describe the relation of control over how knowledge is acquired and disseminated, to social control and to political power. In his book, *Empire and Communication*, Innis argues that throughout the course of history, empires rose and fell based on their control over the dominant media of communication and the degree to which it was balanced

between time and space. Control over the dominant media of communication leads to a monopoly of knowledge and social power that is at first real, then maintained and conserved, then desperately clung to, while alternatives to the dominant media of communication and monopoly of knowledge present themselves as challenges to the status quo.

Historically, it appears as though monopolies of knowledge tended to develop into monopolies over people and society-at-large. In a society where such a monopoly existed, only members of the vanguard (i.e. those who were the enlightened leaders who knew the true will of the people) were allowed to govern and benefit from the monopoly of power. Those who were not 'in' could only hope for some trickle-down spin-off benefits or find some alternative to the power structure.

Innis contends that the degree to which the dominant media of communication was balanced in time and space reflected the degree to which the empire was balanced in the same regard, and that the effect of this balance can be seen in the longevity of the empire. Those empires with a time-binding bias tended to emphasize religion and spiritual transcendence as the organizing feature, while those biased towards space-binding media tended to emphasize militaristic and material conquest of temporal space.

It should be noted that, while they are related, there is a distinction between the *mode* of communication and the *means* by which it is communicated. There are three basic modes of communication among humans: visual, verbal and literate. The visual is limited in complexity, but ubiquitous in ability to be understood by many (e.g. a smile or pointing at a specific thing to the more complex, but still simple, picture drawn to convey an idea or event). The verbal or oral goes beyond grunting or crying etc. to speech developed as a way to communicate thought. The third, literate, is found when written

symbols are used to record speech and thought. When taken together, any mode and means of communication constitute media or a medium of communication.

The means whereby these three distinct modes of communication are conveyed often contain elements of one or both of the other two. Orality is the mode of communication most often associated with face-to-face conversation, but unless one is not sighted, a face-to-face conversation blends with the visual mode in the gestures employed by both speaker and listener. Oral communication can also occur in a literate environment. For instance, a telephone conversation presupposes an amount of literacy on the part of the user who is expected to have some knowledge of numbers, and furthermore, the creation of the telephone system itself required a literate knowledge of the physics of sound and its transmission. Books are most often thought of as a means of literate communication, but the literate blends with the visual as seen on the pages and blends with the verbal as letters or symbols on the pages recall a spoken word.

According to Innis, the relation of a mode and/or its medium of communication to its bias towards time or space and the creation of monopolies of knowledge can be seen by examining the various empires throughout history. The first dominant mode of communication was the spoken word. History and cultural norms were not recorded but were interiorised through the memorization and the communal recitation of stories passed down from generation to generation. Those who were the official repositories and tellers of the story gained a monopoly of 'authoritative' knowledge over them. This was the way in which pre-literate societies transmitted not only cultural heritage, but also social customs, mores and norms, and is typified in the pre-alphabetic Greek civilization with the social function of the Greek theatre and priestly function of the oracles. The oral

mode of communication, according to Innis, is biased in favour of time. Though the spoken word is only materialized for an instant, it can be retained in the mind of the speaker and listener indefinitely. This is as long as the message is simple, plausible and recounted often, and is not widely dispersed over a large geographical area or physical boundary in order that it may be contained and periodically confirmed.²¹

The first written records were in the form of pictographs and hieroglyphs which took special skills and training to write down, and because these did not exactly transcribe the oral, they had to be interpreted, leading to a monopoly of knowledge over these means of communication. The Egyptian Empire is an example of an empire that gained and exercised a monopoly of knowledge over this mode of communication. This Empire was also biased towards time-binding, for the means of communication was inscription on heavy and brittle stone and clay tablets and monuments, many of which have survived to this day. However, this means of communication also had a spatial element as the same inscriptions could be placed in different locales, leading to greater social cohesion by reaching larger numbers of people and a wider area than was possible in an empire based on a strictly oral mode of communication.²²

Just as the phonetic alphabet was a new means of communication that challenged the monopoly of the ruling class of oral societies, the introduction of papyrus (a more portable, easily produced, durable, written medium of communication) challenged the monopoly of knowledge and power enjoyed by the royalty and priests of ancient Egypt

²¹ Harold A. Innis, *Empire and Communications*. (Victoria: Press Porcépic Limited, 1986), 55-57, 59.

²² *Ibid.*, 11-21.

and enabled the Israelites, upon whose forced labour Egypt thrived, to retain their culture and religion and eventually to organize and flee.²³

It is in this constant acquisition of and challenge to monopolies of knowledge and control over means of communication where ‘culture’ is engendered. Elements of “L’Ancienne Regime” survive via legitimacy or entrenchment, and these elements blend with those of the new order, which have been successful in the struggle against the old, thus creating a cultural shift but not usually a total break. Innis used Hegel’s analogy of ‘Minerva’s Owl’, which “begins its flight only in the gathering dusk”, to illustrate the seemingly contradictory notion that culture reaches its peak when a civilization begins its decline.²⁴

New media, therefore, engender struggles for ascendancy not only among groups of people, but also among types of knowledge. It is by dint of such conflicts or contradictions, Innis believed, that cultures flourish....

Inventions in communication compel realignments in the monopoly or the oligopoly of knowledge.²⁵

It is also here where the true nature of conservatism can be found. The popular notion is that conservatism seeks to prevent change and to preserve the status quo. However, according to the tradition of Sir Edmund Burke (1729-1797), who railed against the Jacobin excesses of the French Revolution, true conservatism seeks to *conserve* what is good about the accumulated wisdom of the ages and resists change when it is merely for the sake of change, for dubious ends, or by questionable means.

Those with an agenda of control and hegemony strive to entrench monopoly positions by blood and connection which they try to retain or advance by being the

²³ Ibid., 44-46.

²⁴ Robert E. Babe, *Canadian Communication Thought: Ten Foundational Writers* (Toronto: University of Toronto Press, 2000), 70.

²⁵ Ibid., 71.

dominant cultural force through monopolistic control. These are neither liberal nor conservative by definition but rather, autocratic individuals who are ‘in’ the oligopoly and who come to believe in their own infallibility by virtue of their position of monopoly.

This not only impinges on types of knowledge and groups of people, but also affects the way in which knowledge is acquired, retained and transmitted. Babe notes that, at first, writing was a mnemonic device – an aid to memory - and even opened the way to a universal ethics because it could be transported in and out of different and dispersed areas. However, as it “enlarges the time-and-space universe beyond things remembered and places known” the written became subversive of and displaced the time-binding authority of orality.²⁶

That written or literate communication can be adopted as an aid to memory but then can slowly overtake and reduce memory should be obvious to anyone who has stored their frequently called phone numbers in an electronic device (e.g. auto-dial on a cellular telephone). Relying upon the auto-dial over a long period and then losing the device, they will not be able to remember even their most important telephone numbers because they cannot recall the numbers from memory as the numbers on auto-dial were stored under a symbol or name.

According to Babe’s analysis of where Innis placed the various media of communication on the time vs. space graph, the shift in the bias of communication has been steadily in favour of space-binding media, and has been accelerated by the introduction of first mechanical and then, electronic media.²⁷ This ever-growing bias towards space-binding

²⁶ Ibid., 75.

²⁷ Ibid., 75.

media and social organization prompted Innis to issue “a Plea for Time” in *The Bias of Communication*, because he saw the space-binding bias as being too preoccupied with a “present mindedness”, that could condemn us to repeating mistakes of a forgotten past, and with a rising individuality as a negative force on the more communal aspects of society.²⁸

... Oral societies, moreover, are confined geographically by the distinctiveness of their languages and dialects. There is an emphasis on collectivity and the common good, and since many share the knowledge there is minimal individuation. Speech takes place in time and is inherently shared, so time-bound societies also tend to be consensual. Moreover, they are celebrative.

In comparison, space-bound societies, by which definition are ones which either the price system has penetrated fully or the military exercises a major role in maintaining order, are secular in their concerns, materialistic in their interpretations, and impersonal in their social relations. They accord high value to abstract knowledge and to exercising control over space, but place relatively little value on, even denigrate, tradition or continuity with the past.²⁹

Innis, as a veteran of the First World War, would have witnessed the juxtaposition of an old media, the printed paper or pamphlet with a new one, radio communications, and may have seen first hand how they could have different effects on the public perception of warfare. He was, however, only able to assess the impacts of media of communication up to the advent of television, which was just making its public debut by the time of his death in 1952, and he, likewise, was not able to speculate on the impact of the personal computer. While it can be argued that the personal computer and the Internet have together ushered in a new age of orality in a ‘global village’ as McLuhan would say, Innis would likely have placed this latest medium of communication further in the bias of

²⁸ Harold A. Innis. *The Bias of Communication*. (Toronto: University of Toronto Press, 1999), 61.

²⁹ Robert E. Babe, *Canadian Communication Thought: Ten Foundational Writers* (Toronto: University of Toronto Press, 2000), 73.

space-binding and it would appear Babe agrees.³⁰ Long ago people gathered together to hear the elders speak of how they came to be; today we search for our own individualised, virtual community, anonymously, on-line.

Time-binding messages are ones that foster community and continuity, whereas space-binding messages help engender impersonal (commodified) exchanges, and are instrumental in territorial expansion and control.³¹

Holding an inordinate inclination towards this ‘present-mindedness’ of a spatial bias will emphasize a ‘shock and awe’ approach rather than that of sensible long-range planning which, so doing, can lead to missing or overlooking potential negative future impacts in favour of achieving short term goals.

2.2 Monopolies of Knowledge and the Domination of Nature

Nam et ipsa scientia potestas est. (Sir Francis Bacon)³²

An interesting parallel to Innis’ ‘monopolies of knowledge’ is the notion of ‘the domination of nature’ as expressed by William Leiss. He claimed that the will to dominate nature has been the guiding intellectual force of Western Culture since at least the dawn of the Judaeo-Christian creed and was united with the Scientific Method by Sir Francis Bacon in the early 17th Century. Soon after, the notion was thoroughly secularised and divorced from its “ethical limitations implicit in the pact between God and man, whereby the human race was granted a partial dominion over the earth,”³³ but was, instead, held in the form of trust called stewardship.

³⁰ Ibid., 85-87.

³¹ Ibid., 74.

³² Sir Francis Bacon (1561-1626). “Knowledge is power.”, *Meditationes Sacrae. De Haeresibus in Familiar Quotations*, Compiled by John Bartlett, 10th ed, rev. and enl. by Nathan Haskell Dole. (Boston: Little, Brown, 1919; Online: Bartleby.com, 2000). <http://www.bartleby.com/100/139.39.html>.

³³ William Leiss, *The Domination of Nature* (New York: George Braziller, Inc., 1972), 54.

As with any monopoly of knowledge that tends to extend as a monopoly over society, the will and struggle to dominate nature and the elements often lead toward the contest for domination over common folk who come to be seen as an un-individuated mass of human ‘resources’ which are mashed into the pencil sketch of reality that they have drawn for themselves.

According to Leiss, Sir Francis Bacon, a career civil servant, believed that religion constituted the primary ethical restraint on what *should* be done with scientific knowledge versus what *could* be done with it.³⁴ He rationalized the study of science, distinct from the study of religion and philosophy, as a way to regain the earthly paradise lost through the “Fall of Adam and Eve”. According to Bacon, “The desire of power in excess caused the angels to fall; the desire of knowledge in excess caused man to fall.”³⁵ In this 17th Century example of McLuhan’s *recorso* or recovery principle of the laws of media, Science would regain Adam’s dominion of the earth while religious study and instruction would regain his moral purity.

“This clear separation of natural knowledge and moral knowledge became a cardinal principal of modern thought. It echoes in the contemporary distinction between “facts” and “values”,”³⁶

Bacon’s thought was a dramatic departure from the medieval disposition to emulate the lives of the saints who were able to regain dominion over the wilderness, its creatures and even material decay by dint of their moral virtue.³⁷ Biblical stories such as “Daniel in the

³⁴ Ibid., 66.

³⁵ Sir Francis Bacon in *Familiar Quotations*, Compiled by John Bartlett, 10th ed, rev. and enl. by Nathan Haskell Dole. (Boston: Little, Brown, 1919; Online: Bartleby.com, 2000).
<http://www.bartleby.com/100/139.15.html>.

³⁶ William Leiss, *The Domination of Nature* (New York: George Braziller, Inc., 1972), 52.

³⁷ Ibid., 53.

Lions' Den" and the chronicles of the lives of St. Francis of Assisi and the Incorruptibles (saints whose mortal remains have been supernaturally preserved) are examples of these.

Bacon's unfinished, posthumously published utopian tale, *New Atlantis*, revealed another distinct difference from works previously written, such as that of St. Thomas More (*Utopia*, 1515), where no privilege was given and the benefits of technical progress benefited all.³⁸ In Bacon's dream world, directors of isolated research facilities govern the populous from afar and without consultation or revealing their intentions. Benefits that trickle down are the result of the benevolent application of scientific and technical progress. The visit to one of the facilities by one of the leading directors – "a Man of middle Stature and Age, comely of Person, and had an Aspect as if he pitied men"³⁹ - was one of pomp and circumstance. This visit and the 'benevolent' granting to them what was justly theirs would later be driven to an extreme case of reversal or "chiasmus" (which McLuhan used interchangeably as his fourth law of media) with Rousseau's admonition that men must be "forced to be free", and then later reiterated in the French Revolution with the grand induction of Robespierre as the head of the Revolutionary Council and his Reign of Terror, first over the remnants of "L'Ancienne Regime", and later of all suspected of not actively supporting the Revolution.

Leiss points out another feature of Bacon's work that "stirred" many soon after his death and which feature was still very evident when Leiss wrote *Domination of Nature* in 1972. This resonates loudly in the halls of government, academia and industry

³⁸ Ibid., 62.

³⁹ Ibid., 64.

today and is “the concept of methodically organized scientific research and the idea of a necessary bond between government and research organizations.”⁴⁰

By Leiss’ account, Bacon, in *New Atlantis*, presupposed that the directors would possess moral and ethical senses of responsibility, but also made clear, by their remoteness, secretiveness and attending arrogance, that they also possessed a monopoly over knowledge and its application. It is also evident that this monopoly of knowledge was extended into a monopoly of power over the general populous of New Atlantis, as the directors and scientists are allowed to travel to and from the island research facilities, but the general citizenry is not.⁴¹ This aspect of Bacon’s utopia was prevalent in Leiss’s early years of writing regarding the condition of those living in the Soviet bloc, and it continues alive and well in our post-Cold War era as found in the totalitarian regimes of North Korea, China, Cuba, and Iran as they persist in this dawn of the 21st century.

Leiss contends that from the 17th Century onward, starting with Bacon and accelerating through those who followed (Descartes through Nietzsche to the present day), the idea of the domination of nature has had an undercurrent that draws its adherents first, to mastery in society, then over social change itself.⁴²

In the pages of *New Atlantis* the structure of the relationship between scientific knowledge and its social context suddenly becomes problematic [because of] ... the interaction (or lack of it) between the director of the scientific research establishment and the general population. ...the reason for his visit is unknown and that until this moment none ... had been seen in the city for twelve years. The theocratic majesty of the visiting personage seems to stun the onlookers into an attitude of reverence and utter docility.⁴³

⁴⁰ Ibid., 62.

⁴¹ Ibid., 66.

⁴² Ibid., 96.

⁴³ Ibid., 66.

Leiss calls this docility:

an allegorical representation of our contemporary situation in which citizens are the passive beneficiaries of a technical providence whose operations they neither understand nor control.⁴⁴

While wanting to retain the positive benefits of science and technology, and stopping short of calling for a reunion of the Scientific Method and its technical application including religious mandates per se, Leiss did call for a refocus of the ends of the mastery of nature to more transcendent goals of ethical and moral progress, rather than having scientific and technical innovation be their own ends.

Other than to say that we must regain the self-control that Bacon presupposed in his *New Atlantis*, Leiss does not offer an alternative to what will be the foundation and measure of ethical and moral progress if not religion. A key to this can be found in what Leiss said was the one old value that was retained after the “Enlightenment” period, that of ‘self preservation’.

This is sought through mastery of the world to assure self preservation of the species and, within the species, through mastery of the economic process to assure the survival of the individual. Yet the puzzling fact remains that adequate security (as the goal of self preservation) is never attained, either for the species or the individual, and sometimes seems to be actually diminishing for both. Thus the struggle for mastery tends to perpetuate itself endlessly and to become an end in itself.⁴⁵

The key to the biblical account of the Fall is that self preservation became the immediate and paramount goal after the expulsion from Paradise, and this expulsion was the direct result of Man’s falling to the temptation that a monopoly of knowledge could

⁴⁴ Ibid., 70.

⁴⁵ Ibid., 151.

be attained – ‘you shall be as gods’⁴⁶ was the clarion call of the serpent. In a state of grace, preservation of ‘self’ is secondary to that which is good for the ‘other’, and just as self preservation can lead to less, rather than more security, putting the interests and security of another before one’s own can lead to more security for the individual.

Referring to the story of ‘Minerva’s Owl’, Canada was colonized in the dusk of the age of mechanical communication (the mechanical printing press), but emerged as a nation in the dawn of the telegraph and the electronic media. From the time of the first European settlers to the present, those seeking to govern or profit from Canada’s vast territory have had a pre-occupation with the control of its space, survival in its often harsh climate and domination of all that it offers in natural bounty. This has been to the detriment of the values that are necessary for a community to build up over time in order to establish a lasting legacy.

Throughout its history, Canadian governments have been preoccupied with establishing and preserving a monopoly of knowledge and control not only over communications, but also over the people who inhabit the land, and through this the monopoly of knowledge, the domination of nature and the domination of society are linked. In Canada’s early years, the British were preoccupied with controlling the outlying distant colonies from the centre that was London. After a ‘responsible’ and representative government was established in the union of British North America in 1867, there was a shift that moved control by and for England, to control by and for Eastern Canada over the Canadian West.

⁴⁶ Genesis. 3. 4-5. *The Jerusalem Bible*, gen. ed. Alexander Jones. (Garden City: Double Day & Company, Inc., 1966), 17.

As noted by Babe in *Telecom in Canada: technology, industry and government*, the two milestones in the development of Western Canada were the establishment of the North West Mounted Police (now RCMP) and the Government Telegraph Line in the 1870's. In an Innis-like analysis, Babe says this was “the conjecture of empire with control of the media of communications” which enabled speedy communications from the central government in the East to be linked with a force to ensure compliance in the West.⁴⁷

2.3 How Monopolies of Knowledge and the Domination of Nature are Related to Risk Communication

Risk communication is an integral part of risk management. Though perhaps not expressly stated as such, risk communication concepts and practices have been integral parts of the public policy decision-making process and of technical development. Individuals also engage in risk management and communication, albeit almost unconsciously, when they make everyday decisions about what to eat, drink, buy or sell, and where to live, work and play. In the broadest sense, risk management attempts to balance the benefits from what is wanted or seen as a good against anything with the potential for ill. Risk communication is how these potential ill effects are made known to those parties or stakeholders who may be affected.

We live in a liberal democratic society where some people choose to indulge in what others regard as ‘risky behaviours’ (e.g. smoking, extreme sports, etc.), and where there are often competing sets of information about any risk (e.g. global warming, nuclear safety). Since some make choices contrary to even the most widely accepted scientific or technical information, the tools of science and technology are “insufficient for addressing

⁴⁷ Robert E. Babe, *Telecom in Canada: technology, industry and government* (Toronto: University of Toronto Press, 1990), 56.

the disagreement about what constitutes risk and how it should be managed.”⁴⁸ Though it goes against the grain of our modern positivist sensibilities, *quantitative* measures alone are inadequate to respond to what many consider concerns over risks that could affect their *quality* of life.

The term risk communication has been formally defined by Covello and his associates as “any purposeful exchange of information about health or environmental risks between interested parties.”⁴⁹

This includes information on the nature of the hazard, how great a threat it is, what its impact on those affected will be, whether or not and how to control it, and the likelihood of its occurrence. Interested parties include all segments of society – government and industry, special interest groups and trade organizations, scientists and academics, communities and individuals within them, and the media. Many of these organizations recognize the need for risk communication but do not have a cohesive strategy for putting it into practice.⁵⁰

Risk communication and management was at one time a pretty straightforward process: water was either sweet or brackish, food was edible or not and strangers were either friend or foe. The nature of risk in today’s society has become more complex with advancements in science, technology, and changing social relations. In an appropriate metaphor for Canada, William Leiss notes how risk communication operates within two

⁴⁸ Lori L. Walker. *Risk Communication in Theory, Strategy, and Practice: An Examination of Competing Discourses and Interests in Community Advisory Panels*. (Burnaby: Lori Walker, Simon Fraser University, 1997), 59.

⁴⁹ William Leiss and Chociolko, C. *Risk and Responsibility*. (Montreal: McGill-Queen’s University Press, 1994), 35

⁵⁰ Lori L. Walker. *Risk Communication in Theory, Strategy, and Practice: An Examination of Competing Discourses and Interests in Community Advisory Panels*. (Burnaby: Lori Walker, Simon Fraser University, 1997), 85.

solitudes that contribute to the disconnect that often exists between communicators of risk and their audiences.

The work of risk communication occurs within the great divide that often separates two evaluations of risks: those of scientific experts on the one hand, and those of members of the public on the other. Good risk communication practice seeks to bridge that divide by ensuring that the meaning of scientific risk assessments is presented in understandable terms to the public – and, equally, by ensuring that the nature of the public’s concerns is known and respected by risk managers.⁵¹

When a person is choosing a beverage, they must balance the need to be hydrated with the desire for something that tastes good as well as determine if all that is in the beverage is good for them. A business promoting a new product must advise consumers of any potential risks from its use in addition to extolling its benefits. For this reason, a manufacturer of a home water filtration system will promote the improvements that will be made to the water, but will also inform of the lifespan of the filter and the need to change it regularly. Those who administer the public water system, must balance rising demands on available water resources with costs, environmental concerns, and competing discourses on treatment methods, such as safe levels of chlorination or fluoridation of the water. These are not only matters of personal responsibility, legal obligation and liability, but also of sound judgement, good governance and good business practice. This also demonstrates how doing what one ought to do enables one to do what one would like. When individuals make healthy choices, they live longer, better lives. When business instils confidence in what they sell, they profit. When the public trusts and believes that government is competently representing their interests, that government will be re-elected.

⁵¹ Leiss, William and Powell, D. *Mad Cows and Mother’s Milk: The Perils of Poor Risk Communication*, 2nd edition. (Montreal: McGill-Queen’s University Press, 2004), ix.

Engaging in risk communication and management is, in effect, an exercise of McLuhan's tetrad. Often noting what will be *obsolesced* or made redundant by a new thing and appealing to a more ethereal sense of what will be *recovered* by it, it is usually the balancing of the *enhancements* and potential *reversals* of any policy, legislation, technical advancement or individual choice that frames the discourse.

Often, risk communication has been integrated into public relations or damage control and has been used to minimize public perception of risk in order to advance the particular interests of those that are either in favour of, or against the options being considered.⁵² Like any communication practice, risk communication can be used to inform, to educate and to hold the public good as its end, or it can be used to obfuscate or persuade in order to limit liability or to advance private agendas that may be at odds with the long-term common good.⁵³

The common view among legal advisors is almost always to give out as little information as possible so as to avoid providing ammunition for use in court. This is in almost direct conflict with what communications and community relations experts advise, which is to say everything that is known, as quickly as possible, in terms the layperson can easily understand.⁵⁴

Key to effective risk communication are accuracy and clarity on the part of the one communicating the message, and the trust and perception of those for whom it is intended. For example, the information supplied by experts must be factual, truthful and presented in a manner that is easily understood. The target audience must believe what

⁵² Lori L. Walker. *Risk Communication in Theory, Strategy, and Practice: An Examination of Competing Discourses and Interests in Community Advisory Panels*. (Burnaby: Lori Walker, Simon Fraser University, 1997), 84.

⁵³ Committee on Risk Perception and Communication, Commission on Behavioural and Social Sciences and Education, Commission on Physical Sciences, Mathematics and Resources, National Research Council. *Improving Risk Communication*. (Washington, D.C: National Academy Press, 1989).

⁵⁴ *Ibid.*, 134.

they are told, perceive that their interests and concerns have been adequately addressed and feel that no key information has been concealed or ulterior motives advanced. Where the public trust has been damaged or, in fact, has been broken by incorrect assessments, faulty communication or deliberate manipulation, all subsequent attempts to convey risk messages and the organization itself, will be tainted and poisoned by mistrust and suspicion.⁵⁵

Yet, no achievements or technical advancements are made without some element of risk. For example, the ability to store vast quantities of fresh water behind huge earth or concrete dams must be balanced against the risk of the integrity of the structure that holds it back. Further, all decisions, no matter how mundane, involve risk assessments whether conscious or not. When a person takes a drink from a fountain, they place themselves at risk to the hazards of undetected contaminants in the water.

Risk management arose as a distinct field from our desire to control and dominate the forces of nature while mitigating the risks of doing so. Risk management inherently involves defining the nature and likelihood of what is a risk or potential hazard. As such, it involves the management of the information and knowledge used to determine what constitutes a particular risk weighed against its benefits and how to mitigate it. The need to manage information and knowledge in order to properly assess risk to individuals and society can lead to a desire to monopolize it in order to advance pre-ordained outcomes or avoid responsibility and liability in the event that something goes wrong.

Risk communication developed from the need to assure those affected by, but often outside of, the decision making process that their best interests are being looked after. It has become a necessary practice because there have been several instances in

⁵⁵ Ibid.

Canada's past, both recent and distant, where it was revealed that personal gain, profit or position was put above the public interest either by those in authority or those in a position to gain.

The necessity of risk communication today is in large part a result of the monopolies of knowledge and power of yesterday. As these have been revealed, often with the aid of new technologies of communication, wide-scale cynicism and scepticism held among the citizenry has grown to unprecedented levels and has reached the point where they have become so desensitised to abuses of public trust from patronage appointments, corporate or special interest influence and corruption and scandal, that everything is viewed with suspicion and many citizens refuse to exercise their right to vote. This is typified by a commonly expressed view that, "it doesn't matter for whom you vote because they are all the same". This was also evident in recent (late Spring 2005) polls that have shown growing support for the federal government despite the ongoing scandals, revelations of Machiavellian political manoeuvring and gross negligence in its management of the public trust and money.

A pervasive perception of scepticism and a failing public trust in those holding positions of authority and power, juxtaposed with "the greater demand and access to information [which] has created a greater expectation by the public of their 'right to know'"⁵⁶ are the drivers of risk communication.

The barriers to effective risk communication are similar to those things that make it necessary. Lori Walker notes these barriers in the dissertation *Risk Communication in*

⁵⁶ Lori L. Walker. *Risk Communication in Theory, Strategy, and Practice: An Examination of Competing Discourses and Interests in Community Advisory Panels*. (Burnaby: Lori Walker, Simon Fraser University, 1997). 70.

Theory, Strategy, and Practice. They are all related to a monopoly of knowledge or to attitudes that are cultivated among those who believe they have it.

- departments, staff, or management unsympathetic/indifferent to the public
- constraints of resources (fiscal and staff)
- Risk Communication (RC) may invoke unnecessary concern
- Organization's reluctance to disclose information
- Organization had to wait for permit to act on public concerns or to disclose information
- Outdated approaches
- Inter-department conflict
- Department approval process uncoordinated
- Senior management and PR removed from the public concerns
- RC done reactively
- Doing poor risk communication
- Lack of skills
- RC threatens other departments – turf wars
- Environment and Engineers vs. Marketing
- Manager's personality
- No support from engineering, finance, legal
- Confusions with other external communication functions⁵⁷

These barriers to effective risk communication can be overcome only when a shift in attitude towards 'partnerships' and 'openness' is embraced and becomes the operational culture of those organizations involved in the practice.⁵⁸ It is doubtful, that risk communication can be completely severed from public relations (PR) or from the advertising techniques that may be employed in crafting and disseminating the risk message, but where the aim of an advertising campaign is to *persuade* or *induce* the target audience into spontaneous action, the aim of risk communication should be to *inform* the audience so that they can *choose* the best course of action. All too often however, the PR aspects of risk communication dominate the exercise in an effort to

⁵⁷ Ibid., 102-103.

⁵⁸ Ibid., 83.

bridge the credibility gap⁵⁹ described above or to sway the public to a pre-ordained outcome because they may think that if the “public was educated, it would ultimately agree with the organization.”⁶⁰

2.4 How Monopolies of Knowledge Affect a Canadian’s Governance and Perception of Risk

“Freedom is the recognition that no single person, no single authority or government has a monopoly on truth.” (Ronald Reagan)

Perhaps it is the Canadian notion of “Peace, Order and Good Government”, distinct from our southern republican neighbor’s “Life, Liberty and the Pursuit of Happiness”, that gives rise to the monopolistic tendencies found in Canadian culture which are generally tolerated in both private and public spheres. The culture of Canadian government, particularly that of the federal branch, but including the provincial and municipal bodies, is one that gives the impression that public authorities, whether they be in the executive, legislative or judicial branches or in one of their bureaucratic bodies, possess a monopoly of knowledge on what is the latest ‘best practice’ for all.

From the perspective of the average citizen, the government acts in a monopolistic manner but won’t necessarily accept the responsibility that comes with this authority. For example, the federal government of Canada controls the cod and salmon fisheries, yet has not accepted responsibility for their collapse; the federal government has control over the country’s donated blood supply, but no public authority took responsibility for knowingly distributing blood products that were tainted with HIV and Hepatitis; the federal government decided that it needed a monopoly of knowledge over

⁵⁹ Ibid., 74.

⁶⁰ Ibid., 69.

Canadians' possession of firearms, yet no one in government accepts responsibility for the billion dollar cost overruns of the program or for the failure to prevent rising gun-violence in both urban and rural areas; the federal government felt that it could promote and direct national unity in Quebec, and again, will not accept responsibility for the millions of dollars that went missing through government-friendly advertising agencies.

There is strong evidence, found among many citizens, of a popular suspicion of government corruption, and that many citizens regard government as being hopelessly inept, arrogant and without accountability or remorse when wrong. This view is not new and, in fact, pre-dates Confederation, where demands for more involvement by an educated populous were a main cause of the publisher, activist, politician and later rebel, William Lyon Mackenzie, leader of the ill-fated rebellion of 1837. Mackenzie railed against the monopoly of power enjoyed by "the Family Compact" and decried the patronage system of appointments. In his time, there was little or no public consultation, only the Governor General or the Upper House of Lords could pass and enact legislation, and the popularly elected Lower House of Representatives could not. There was no accountability to the public or public participation in the formation of policies. Mackenzie sought to rectify this by using his publishing activities to inform, educate and inspire the common person to take action against an unjust, non-participatory, undemocratic system. He ran a partisan press of the public rather than of the ruling political party, which led to his press being vandalized in an incident known as the

“Types Riot”, perpetrated by members of the Family Compact in response to his press’s exposure of their monopoly of power.⁶¹

In his rude fashion, Mackenzie helped attract the attention and support of the common people to the one cause about which he never changed his mind. He was obsessed with the need for honest and efficient government and for government which would respond immediately to the criticism and the wishes and the welfare of the people.⁶²

Mackenzie became disillusioned with the inability to make change through democratic means and rallied the commoners of Upper and Lower Canada to form an armed revolt against the Family Compact, which revolt failed. What angered Mackenzie most about the Family Compact was its collective arrogance lived in its belief that, by virtue of appointed positions or fortune, its members were entitled to privilege, were above the common folk and were therefore best able to make decisions for the folk and under no obligation to share information or decision making with the folk.⁶³

I have often proposed to influential members of the present as well as the two last legislatures of Upper Canada, the establishment of a reading-room, and the annual augmentation of “the library,” but always in vain. The representatives of our Upper Canada “superior intelligences,” possess so much information already, that they appear to think an addition to the stock would occasion a superfluous waste of public money.⁶⁴

The Family Compact that Mackenzie railed against was supposed to have dissolved with the establishment of representative government and Confederation in 1867. However, taking a quick scan of Canadian political history, the names of the

⁶¹ John Sewell. *Mackenzie: A political biography of William Lyon Mackenzie*. (Toronto: James Lorimer & Company Ltd., 2002).

⁶² William Kilbourn. *The Firebrand: William Lyon Mackenzie and the Rebellion in Upper Canada*. (Toronto: Clarke, Irwin & Company Limited, 1956). 36.

⁶³ John Sewell. *Mackenzie: A political biography of William Lyon Mackenzie*. (Toronto: James Lorimer & Company Ltd., 2002), 56.

⁶⁴ William Lyon Mackenzie. “Quebec Reading Rooms”, *Colonial Advocate* May 12, 1831 in *The Selected Writings of William Lyon Mackenzie: 1824-1837*. Edited by Margaret Fairley. (Toronto: Oxford University Press, 1960).

families have changed over time, but the original habits and practices of the Family Compact are still entrenched in our political culture. In a Summer 2005 series of articles on “The New Canadian Establishment” in *Maclean’s* magazine, Peter C. Newman notes that the current generation of Canadian elite came from varied backgrounds and rose to their positions through hard work, yet the tendency to interact and compact as an elite group remains. Whereas the Family Compact of old was bound by blood, the new Canadian establishment’s bond is money. Newman states:

They reckon their success equally by their bottom lines as how quickly they qualify as worthy Canadians. Or to be more precise, how quickly they gain recognition as members of the establishment or, to be raw to the bone, be nominated for Orders of Canada.⁶⁵

and:

Having studied the various incarnations of the Canadian Establishment for the past three decades, I have learned what the admission rules are, and how they have changed to meet the times. I have also met and know members of this compelling new wave of newcomers, and my reaction to their elitist aspirations is simple: we should be so lucky.

I am convinced they will succeed in their quest for pivotal influence in shaping Canada’s future. They share the quality that Charles Darwin long ago isolated as the essential character for survival of the species. The subtle Darwin defined the attribute of the superior species as being the “most adaptable.” No more apt description applies to the ambitious, if secretive members of the Third Wave. It is their remarkable ability to adapt to their new surroundings that will eventually endow them with power and glory, Canadian style.⁶⁶

2.4.1 Walkerton and Monopoly of Knowledge: A Brief Case Study

The Walkerton Water Tragedy of May 2000 was a ‘watershed’ moment when Canadians’ faith in their government to provide a basic necessity in a competent manner

⁶⁵ Peter C. Newman. “The New-Canadian Establishment”, *Maclean’s*. May 23, 2005. (Toronto: Rogers Publishing Limited, 2005). 53.

⁶⁶ *Ibid.*

was changed to severe and perhaps chronic doubt. This tragedy also called into question the ability of government – at no matter which level - to be effective in accomplishing anything competently at all. This was not simply the story of a sudden event and the local government's inability to cope with the crisis, but continues as an example of the monopoly of knowledge operating to dominate the natural environment without adequately assessing risk and sharing knowledge.

This tragedy also serves as a warning against maintaining blind faith in any body that has responsibility or control (or seeks it) over those things that are basic to survival. Lastly, it serves as a wakeup call for an apathetic public and warns of the risks of not participating in decision-making processes or for taking the provision of the basic necessities of life for granted.

In 1978 some new wells, fed by groundwater runoff, were brought on-line to serve the population of Walkerton, Ontario. One of the new wells was sited near farmland on which cattle were being raised. Early in this process, it was recommended that if this well was to be used it should be monitored daily, heavily chlorinated with automatic shutoffs and the source protected by buying up the surrounding farmland. The well was brought online; the monitoring, safety and source protection measures were not.⁶⁷

The persons in charge of the water system were not specifically trained in water management, nor were they aware of the full risks to human health caused by E. coli bacteria or other water borne contaminants. As it were, they 'fell into' the job. The Managing Operator since 1988 had an operator's license obtained through a 'grand

⁶⁷ The Honourable Dennis R. O'Connor. "Walkerton Inquiry Report Part 1." Ontario Ministry of the Attorney General. (Toronto: Queen's Printer for Ontario, 2002), Ch 1. 3.
<http://www.attorneygeneral.jus.gov.on.ca/english/about/pubs/walkerton/part1/>.

fathering process'.⁶⁸ The monitoring and testing of water samples became so routine, that it was common practice for samples to be taken from one location then marked as though they came from various points in the system. Treatment at the wells was done in a haphazard fashion without knowledge of proper chlorination methods. Sometimes residents even urged the operators to use less chlorine to improve the taste of the tap water.⁶⁹

The municipal commissioners who were to oversee the operation, the Public Utility Commission (PUC), did not have any specific training or knowledge in the area of water systems either. As time went on and commission members changed with municipal governments, the operations of the PUC never came into question because it was assumed that they knew what they were doing.⁷⁰

The local Public Health Office, under the jurisdiction of the next higher level of authority, the Ontario Provincial Government, would become involved in the event they were notified by the Operator who, in turn, would have been notified by the provincial government testing laboratory that samples had tested positive for bacterial or other contaminants. Prior to 1996 it was standard protocol, but not a regulation, for government laboratories to notify both the Ministry of the Environment (MOE) and Public Health Authority of adverse test results.⁷¹

In the mid-1990's, the Ontario Progressive Conservative government of Mike Harris, as part of his "common sense revolution", contracted the testing to private

⁶⁸ Ibid., 28.

⁶⁹ Ibid., 16-17

⁷⁰ Ibid., 4.

⁷¹ Ibid., 31

laboratories. These private firms were only obliged to notify the Operator of the test results but not the MOE or Public Health Authority.⁷²

The provincial MOE had the overall responsibility for the provincial waterworks as well as for source protection and sewage treatment and discharge. It too was affected by the cost cutting of the government and many claimed that it was too understaffed to carry out its monitoring and enforcement roles.⁷³

For over two decades prior to the events of May 2000, the Walkerton PUC was operated negligently and without effective oversight both at the municipal level, which had de facto control over it, and at the provincial level, which had the legal authority over the waters that ran within its boundaries. Since nothing serious had ever occurred, no one involved became concerned and no risk was ever communicated to the public.⁷⁴

The Walkerton water system had been inspected by the MOE three times in the 1990's; the last time was in 1998. Several deficiencies in the infrastructure and operation of the system were noted but were never followed up by the MOE, nor was there any review by the PUC commissioners to ensure that the system was being safely operated.⁷⁵

In May 2000 in the Walkerton area, there occurred a period of high rain and runoff, especially at the low-lying Well #5 near which cattle were grazing. On Thursday May 18th test results from the May 15th samples indicated that the water was contaminated with E. coli. That same day residents of Walkerton began arriving at the

⁷² Ibid.

⁷³ CBC Archives. Radio Program: "Metro Morning", Broadcast Date: May 25, 2000, Host: Andy Barrie, Announcer: Anubha Parray, Guest(s): Murray McQuigge. "The whistleblower" <http://archives.cbc.ca/400d.asp?id=1-70-1672-11516>.

⁷⁴ The Honourable Dennis R. O'Connor. "Walkerton Inquiry Report Part 1." Ontario Ministry of the Attorney General. (Toronto: Queen's Printer for Ontario, 2002), 7. <http://www.attorneygeneral.jus.gov.on.ca/english/about/pubs/walkerton/part1/>.

⁷⁵ Ibid., 31.

local hospital complaining of diarrhea and stomach cramps. The Manager and Operator of the PUC, Stan Koebel, did not notify the Public Health Office of the water testing results but, instead, attempted to take care of the matter himself by flushing out and hyper-chlorinating the system.⁷⁶ When the Regional Health Officer contacted Koebel on May 19th, Koebel assured him that there was nothing wrong with the water. By the 20th, more people were presenting severe symptoms and the Public Health Office called Koebel twice and each time he denied there was anything wrong.⁷⁷

On May 21st, people were still falling ill and when a common cause, such as food poisoning, could not be determined, the Public Health Office issued a boil-water advisory and took their own water samples throughout the system. The Public Health Officer notified the Mayor, but the Mayor did not pursue the matter further by disseminating the information.⁷⁸ The public advisory was broadcast over the radio but no concentrated effort was undertaken to ensure that all citizens were notified (for example: going door-to-door).⁷⁹ On May 23rd the Public Health Office's test results came back confirming the suspicion that the water was the cause of the infections and identifying the presence of a fatal strain of the E. coli bacteria. When confronted with these results, the Manager and Operator of Walkerton's PUC admitted that the sample from May 15th had come back positive, that he had known that the town's chlorination system had not been working

⁷⁶ Ibid., 10.

⁷⁷ CBC Archives. Radio Program: "Metro Morning", Broadcast Date: May 25, 2000, Host: Andy Barrie, Announcer: Anubha Parray, Guest(s): Murray McQuigge. "The whistleblower" <http://archives.cbc.ca/400d.asp?id=1-70-1672-11516>.

⁷⁸ The Honourable Dennis R. O'Connor. "Walkerton Inquiry Report Part 1." Ontario Ministry of the Attorney General. (Toronto: Queen's Printer for Ontario, 2002), 11. <http://www.attorneygeneral.jus.gov.on.ca/english/about/pubs/walkerton/part1/>.

⁷⁹ Later, the public health officer admitted that he should have issued the warning over television rather than radio. He should have done both, and gone door to door to ensure all were advised.

properly for some time, but that they were in the process of replacing it.⁸⁰

On May 25th, the Regional Public Health Officer went public on the local CBC radio station with what he knew. By the time everyone realized that the water was contaminated, over a thousand people were seriously ill, seven people had died and the rest of the country had their faith in their water rocked to its core.

In the immediate fallout the Regional Health Officer was praised for raising the alarm but was also criticized for waiting four days from his first suspicions to issue a boil-water advisory. The cost cutting of the provincial government was immediately blamed for the lack of oversight and enforcement by the Ministry of the Environment and for the closure of government laboratories, lack of qualified operators and a crumbling infrastructure. The town's Mayor and council were taken to task because they did not attempt to mitigate the crisis in a timely fashion and had no emergency plan.

On May 30th, Premier Harris and Koebel appeared separately before the media, where the Premier claimed there was no fault with the system that could be attributed to cutbacks but that it was due to human error, and where, speaking through his lawyer, Stan Koebel denied any personal responsibility. The Premier opted for an internal probe of the tragedy rather than hold a public inquiry. On May 31st after a seventh person died, the Premier relented and called for a public inquiry.⁸¹

At the Walkerton Inquiry in December 2000, Koebel admitted responsibility, acknowledged his routine falsification of records and divulged that employees were often

⁸⁰ CBC Archives. Radio Program: "Metro Morning", Broadcast Date: May 25, 2000, Host: Andy Barrie, Announcer: Anubha Parray, Guest(s): Murray McQuigge. "The whistleblower" <http://archives.cbc.ca/400d.asp?id=1-70-1672-11516>.

⁸¹ CBC Archives. "Death on tap: The poisoning of Walkerton". <http://archives.cbc.ca/500f.asp?id=1-70-1672-11534>. (Accessed June 23, 2005).

drunk on the job. In February 2001, less than one year after the tragedy, all of Walkerton's five thousand residents were each offered the grand sum of \$2,000 in an out-of-court settlement. Those with severe illnesses, deaths or monetary damages were entitled to file separate claims. In April 2001, Walkerton town council voted to buyout Koebel's contract for \$87,000 rather than contest his severance package in court.⁸²

In January 2002, the Walkerton Inquiry, which was never intended to assign blame or liability,⁸³ stated what everyone had already known: that this tragedy could have been prevented. In May 2002, Harris's successor, Ernie Eves, introduced new water legislation that many criticized for still not doing enough to protect citizens in the areas of source protection⁸⁴. British Columbia's new Drinking Water Protection Act would later similarly be criticized.

In April 2003, the Ontario Provincial Police laid charges against PUC Manager Koebel and his brother Frank, but no charges were pressed against any other members of Walkerton's Public Utility Commission, against anyone in the Ministry of the Environment or against any other provincial body that had failed to protect the public adequately. There were many who thought the list of guilty parties should also have included the Premier, whose 'Common Sense Revolution' had resulted in service cutbacks and the privatization of government testing. In October 2004, the Koebels pleaded guilty to criminal charges of "public mischief" thereby avoiding trial on other charges, which included forgery and betrayal of the public trust. The crown sought two

⁸² Ibid.

⁸³ The Honourable Dennis R. O'Connor. "Walkerton Inquiry Report Part 1." Ontario Ministry of the Attorney General. (Toronto: Queen's Printer for Ontario, 2002), Ch 1. 39.
<http://www.attorneygeneral.jus.gov.on.ca/english/about/pubs/walkerton/part1/>.

⁸⁴ CBC Archives. "Death on tap: The poisoning of Walkerton". <http://archives.cbc.ca/500f.asp?id=1-70-1672-11534>. (Accessed June 23, 2005).

years in prison for Stan Koebel and house arrest for Frank. Stan was sentenced to one year in jail and Frank received six months house arrest.⁸⁵

Residents of Walkerton have expressed their frustration at the apparent lack of full justice evidenced in the charges and imposed sentences and in the diminished participation of all parties involved. They have also expressed a profound loss of trust in those of authority who are supposed to be protecting them. They now maintain a heightened awareness with caution and fear of what they used to accept as common everyday provisions, such as turning on the tap to have a drink of water or to brush teeth. These residents continue to suffer from a wide range of health conditions that include irritable bowel syndrome and blood cell problems. It should be noted that the people of Walkerton were split with both feelings of pity and rage for the Koebel brothers who had failed in their duty to competently and safely run their water system. Many also regard the two brothers as being used as scapegoats for the larger system of ‘representative’ and ‘responsible’ government.⁸⁶

2.4.2 The monopoly of knowledge over water policy: post-Walkerton

“Where we found these rock drawings, there was always water within six feet of the surface.” That kind of research goes not only into the past and forgotten life, but points to tomorrow’s water supply.⁸⁷

The existence of a monopoly of knowledge over water policy and legislation formation is evident in the following citations, taken from the recommendations of Justice O’Connor in the Walkerton Inquiry Report (found in Part Two), and which call for more involvement of affected parties, especially the public. These particular

⁸⁵ Ibid.

⁸⁶ Ibid.

⁸⁷ Ezra Pound. *Guide to Kulchur*. (New York: New directions Books, 1937). 57.

recommendations deal with source protection and they serve to be a measure of how 'public' policy is formed in general.

4.3.6 Participation of Affected Groups and the Public

The involvement of a broad range of affected groups in the watershed-based source protection planning process will be key to its success. The process must be seen to be broadly and fairly inclusive of the interests that will be affected.

... Involving a broad cross-section of water users in the planning process will both help to ensure that all issues are considered in the planning process and bring new perspectives into the process....

... Although the form of consultation may vary to accommodate local circumstances, the need for it is clear. As a general rule, consultation should err on the side of inclusion, both regarding which parties are consulted and regarding the level of involvement in the process. Consultation should never be pro forma; it should be meaningful and substantial. Interested parties must be given adequate time and information to ensure that their views are fully canvassed and considered.

Without extensive consultation, watershed plans are likely to suffer from a lack of commitment from affected groups and are less likely to be successful.⁸⁸

That water policy management has operated without adequate public input for some time is echoed by the University of British Columbia's Karren Bakker who notes that one of the three obstacles to sustainable water supply management is governance, along with financial and supply-and-demand side issues. The issues with governance of the water supply, according to Bakker, include:

... inefficient management, low transparency, poor accountability, absence of input mechanism for consumers into decision-making, and lack of managerial autonomy of utility.⁸⁹

⁸⁸ The Honourable Dennis R. O'Connor. "Walkerton Inquiry Report Part 2." Ontario Ministry of the Attorney General. (Toronto: Queen's Printer for Ontario, 2002), Chapter 4. 107-109. <http://www.attorneygeneral.jus.gov.on.ca/english/about/pubs/walkerton/part2/>.

⁸⁹ Dr. Karen Bakker. *Good Governance in Restructuring Water Supply: A Handbook*. Ottawa: Federation of Canadian Municipalities. http://www.geog.ubc.ca/~bakker/Good_Governance_handbook.pdf.

These repeated calls for more public involvement in the policy and legislative processes demonstrate a colonial mentality which persists still in Canada, a nation that does not yet have its own head of state. As was detailed in the story of the 1837 rebellion, this mentality is entrenched in our history and seems to be ingrained in the national psyche. First the motherlands of France and England directed public affairs in the colonies, and then the federal government of British North America extended beyond Upper and Lower Canada to encompass the resource rich Western and Northern Territories through the telegraph line, Mounted Police and the railroad. Appointed, not elected, Governors General and Lieutenant Governors signed the deals that made provinces out of territories.

Despite having jurisdictional powers detailed in the Articles of Confederation, several areas overlap, as in the constitutional authority for drinking water. It is important to restate that where jurisdictions do overlap, authority reverts to the higher level, thus our political history is filled with jurisdictional battles. Even in areas where provincial authority is clear, the federal government can exert influence. For instance, the provinces have authority over health care and education, but they also receive money for these areas from federal tax dollars. The federal government has set national standards through legislation such as the *Canada Health Act*, and can and has used this type of legislation as “a stick along with the carrot funding” to get the provinces to comply with the federal standards and health policy. Those that do not comply with the Act do not get the funds that follow from the adoption of the standards.

The trend in Canada is for power to concentrate in monopolistic forms, and though more and more of today’s “policy speak” calls for local and individual autonomy

and input, the habit of acquiescing to authority is hard to kick and often is only recognized as an impediment when it turns and kicks back. Though the local voice is recognized as a necessary partner, the tendency to fall back on higher levels of authority remains, where sometimes this is justifiable as an organizing principle for a national state, at other times it is a questionable way of retaining overall control.

The development of watershed plans should also take place in consultation with the MOE, other ministries (Agriculture, Food and Rural Affairs; Municipal Affairs and Housing; Natural Resources; Consumer and Business Services), non-governmental organizations, and other affected groups, including local public health officials. I also encourage the federal government to participate where appropriate; ...

The participation of federal agencies will help ensure intergovernmental coordination in an area where constitutional jurisdiction is not always clear.⁹⁰

Again, today much of the policy discussion at all levels- provincial, federal and international- highlights the need for official agencies, be they government or other bodies, such as non-government organizations, for giving more weight to local custom, knowledge and meaningful participation than they have in the past. It is difficult to shed the remnants of the ‘we know what’s best for you’ mentality, which is used to justify authoritarian operations of centralized planning bent on achieving ‘efficiencies’ above all else while rarely achieving them. This is also the new mantra of the current literature in risk communications where those responsible for communicating risks to the public are being encouraged to err on the side of disclosure and inclusion rather than managing the crisis as a public relations exercise.

⁹⁰ The Honourable Dennis R. O’Connor. “Walkerton Inquiry Report Part 2.” Ontario Ministry of the Attorney General. (Toronto: Queen’s Printer for Ontario, 2002), Chapter 4. 108. <http://www.attorneygeneral.jus.gov.on.ca/english/about/pubs/walkerton/part2/>.

Unfortunately, democratic institutions are rarely ‘efficient’ organizations and they are expensive; sometimes costing the lives of those willing to defend them. The representation of divergent interests may increase, but there is a trade-off in the duration and cost of the process. This is a relation to be recognized, but not used as an excuse for not opening up the process.

This “new direction in the dynamics of governance around the globe...”⁹¹ is actually a recovery⁹² of the “Principle of Subsidiarity”, which is defined in the Catholic tradition and states that nothing should be done by a higher authority that can be accomplished at a lower level.⁹³ In practical terms this means: private before public, local before provincial, provincial before federal and federal before international.

The quote by Ezra Pound at the beginning of this section illustrates that recoveries of knowledge from the past transmit the accumulated wisdom to the present and assist us in avoiding repetition of the errors of history. As Harold Innis stated in *The Bias of Communication* (1999):

The danger that knowledge of the past may be neglected to the point that it ceases to serve the present and the future – perhaps as undue obsession with the immediate, support my concern about the disappearance of an interest in time.⁹⁴

The recommendations of the Walkerton Inquiry Report follow a pattern that says more direct public representation is needed at the policy formation level, but stops short of actually giving them a seat at the table.

⁹¹ David Brooks. *Water: Local-Level Management*. (Ottawa: International Development Research Centre, 2002). 63.

⁹² Marshall McLuhan. “Laws of Media” in *Essential McLuhan*, edited by Eric McLuhan and Frank Zingrone. (Concord, ON: House of Anansi Press Limited, 1995).

⁹³ Catechism of the Catholic Church, [English translation]. (Ottawa: Canadian Conference of Catholic Bishops, 1994), 395.

⁹⁴ Harold A. Innis. *The Bias of Communication*. (Toronto: University of Toronto Press, 1999), 61.

... To ensure that the benefits of a variety of perspectives are brought to bear on the planning process, the Province, where appropriate, should make funding available to help public interest groups participate.

To ensure that the process is and is seen to be fair, complete, and reasonable, and as a means of discouraging any undue influence, the source protection planning process should be fully transparent to the public. Draft plans and proposals should be widely published. Meetings of the planning committee, including affected groups, should be open to public attendance ...⁹⁵

The above recommendations *seem* to indicate that the monopoly of knowledge in this sphere is breaking down and opening up to the public. However, the bias of the author of the report, Justice O'Connor, which results from his being a product of the very system under review, is revealed in the caveat to the above, where the sentence ends with a statement that shows those who hold the monopoly of knowledge in the public sphere are willing to open the door *a little*, but not wide enough to allow the public in the room.

... although *not necessarily full public participation, which might make meetings unwieldy*. Planning committees should *at least invite public comment* in writing *at some point* in the process.[Italics added]⁹⁶

It must be stressed here that a monopoly of knowledge does not have to be created as a conscious act by those bent on social engineering or maintaining a hegemonic state. It can be the unforeseen unintended by-product, the "reversal" as Marshall McLuhan describes it, of a system pushed to its extremes.⁹⁷ No society has operated in a purely democratic form. Pushed to its extreme, democracy could lead to tyranny of the majority or degenerate into 'rule by the mob'. Of necessity, there are levels of participation that

⁹⁵ The Honourable Dennis R. O'Connor. "Walkerton Inquiry Report Part 2." Ontario Ministry of the Attorney General. (Toronto: Queen's Printer for Ontario, 2002), Chapter 4. 109.
<http://www.attorneygeneral.jus.gov.on.ca/english/about/pubs/walkerton/part2/>.

⁹⁶ *Ibid.*, 109.

⁹⁷ Marshall McLuhan. "Laws of Media" in *Essential McLuhan*, edited by Eric McLuhan and Frank Zingrone. (Concord, ON: House of Anansi Press Limited, 1995).

get progressively exclusive in their daily operations while remaining open for all to enter. For example, all citizens have the right to vote for their representative voice in public office and they have the right to seek public office, but in a free society you can't force those enfranchised to exercise their right nor can all hold a public office at the same time. If one does not exercise their rights, then they must accept what others decide for them. Democracy does not run by itself, it requires the active engagement of citizens, but democracy is a numbers game – the majority wins - and those that are engaged set the process.

In urban and suburban Canada and, specifically British Columbia, water supplied from wells has basically become obsolete. However, the rise in popularity of bottled water due to the decline in popularity of publicly supplied water demonstrates the *recourso* principle of McLuhan's "Laws of Media" which says that any new artefact recovers something of an older one previously rendered obsolete.⁹⁸

In many parts of Canada, modern public water works have replaced private wells, but bottled water has returned people to an age where drinking water was "fetched", albeit coming now from a store rather than a well, as in the past. The increased cost of this change more than offsets the modern convenience gained, because it serves to tip the balance towards the commodification of what many consider to be a public good. On the other hand, if all our drinking water were priced at the retail level perhaps we wouldn't be watering our lawns with it or flushing it down the toilet.

⁹⁸ Ibid.

2.5 New Technologies of Communication and Challenges to Monopolies

Usury endows no printing press.
Usurers do not desire circulation of knowledge.⁹⁹

Knowledge is very much like money. Unless it circulates it stagnates and is rendered useless. Harold Innis, an economist, wrote that the introduction of new technologies of communication challenge entrenched monopolies of knowledge to the extent of marking the rise and fall of empires.¹⁰⁰

Today, the computer, advances in telecommunications and the Internet are having the same kind of effect, but in a Trinitarian-type union of the visual, oral, and written media. At least in their ideal and real capabilities, they facilitate the diffusion of not just *information* (for information can be used to conceal or divert as well as to illuminate), but also the wide diffusion of *knowledge*: by many, to many, in many places, at any time, in a short time, for relatively little cost. Coupled with democratic advances in legislation in such areas as the freedom of, and access to, information (which can also be used to hinder rather than facilitate), they are enabling citizens to gather and produce their own content and draw their own conclusions, whether well formed or not.

With respect to potable water, new technologies have broken the ‘natural’ monopoly that governments had over it by allowing individuals and companies to treat their own water to their own standards or to choose an alternative to the publicly funded utility in the form of bottled water, supplied by a multinational such as Coca-Cola.

⁹⁹ Ezra Pound. *Guide to Kulchur*. (New York: New directions Books, 1937), 62.

¹⁰⁰ Harold A. Innis, *Empire and Communications*. (Victoria: Press Porcépic Limited, 1986).

CHAPTER 3

DRINKING WATER POLICY AND LEGISLATION IN THE CANADIAN CONTEXT AND THE BRITISH COLUMBIA WATERSCAPE

At the heart of many drinking water policy debates is whether water is to be considered a public good or a commodity. In some countries, the government assumes no responsibility to provide drinking water, in others the government has transferred the responsibility to the private sector, and in some areas of the world, such as Canada, the public sector provides water at rates well below not only its market value but also below the actual costs of supplying, treating and distributing it.

3.1 Is Water is a Public Good or a Commodity, or Both?

The private versus public debate over ownership, management, maintenance, monitoring, and distribution of drinking water is one that often devolves into two polemic responses with no communication between these two positions - often over-simplified and crystallized into media sound bites. One position says that water is a natural resource and that it is there to be exploited and sold as a commodity. The other position says that water is a gift from God or nature and is therefore a public good that must be supplied as a basic human right. Subscribing exclusively to one position or the other fails to adequately account for the reality of the world in which we live. The reality that water is both a public good and a commodity means that some will favour one to the exclusion of the other unless the problem is viewed as a matter of degrees.

Some of the toughest conceptual issues flow from the awkward fact that water is both an economic good (with economic value) and a necessity of life, to which every person has a recognized right of access.¹⁰¹

Water may fall from the sky as a free gift from God, but it doesn't reach most people's homes without human intervention. As such, a hierarchical approach to this polemic problem provides a remedy. Water must be considered *first* as a public good *then* as a commodity and the public authority must satisfy the public good before commercial or economic benefits are sought. This is not to say that commercial enterprises cannot be used to satisfy the public good, but it does mean that commercial imperatives must not override considerations for the primary public good.

Whose water is it? Whether it's yours or mine, everyone's or no one's, a first step in thinking about it must be to recognize that it is limited. Markets, for all their flaws, at least offer the virtue of coming to terms with scarcity. People remain too ready to believe that somehow water will always be abundant. If access to water is a human right, it cannot be a boundless one. Buying and selling, within limits, at least drives home the lesson that using water always has a price.¹⁰²

Presently, much of the language of present day water policy refers to water users as customers and consumers. In contrast, the language of user rights and advocacy groups refers to users as citizens or residents. If one has a basic human right to water it becomes an entitlement that is limited by available quantities of an acceptable quality. This cannot be placed below commercial imperatives like the profit motive. What must happen is a determination of the line of demarcation between the two. For example, how much water does one have a right to? Use beyond a certain level should be considered an economic

¹⁰¹ David Brooks, *Water: Local-Level Management*, (Ottawa: International Development Research Centre, 2002), 63.

¹⁰² *Whose Water Is It? The Unquenchable Thirst Of A Water-Hungry World*. Edited by Bernadette McDonald and Douglas Jehl. (Washington, D.C: National Geographic Society, 2003), 7.

activity and charged accordingly. The key problem here is that fresh water is not distributed equally, even in countries such as Canada that appear to have plenty.

3.2 Who Has the Ultimate Authority Over, and Responsibility to Provide Safe Drinking Water in Canada? Or: How Water Works

According to the terms of the *British North America Act*, the Provinces have authority over the waters that run within their boundaries. The federal government of Canada has authority where those waters cross or could affect other jurisdictions such as neighbouring provinces or national states. The federal government also has authority over water where it concerns national interests and public safety.

There is no explicit ‘Right to Safe Drinking Water’ entrenched in the Canadian Constitution or Charter of Rights but there has been a precedent for safe drinking water in environmental regulation and in public health and safety. As noted by Justice Dennis O’Connor in Part Two of “The Walkerton Inquiry Report”:

The power to legislate with respect to drinking water has not been expressly assigned in the Constitution... The regulation of the safety of drinking water has two general components: the regulation of drinking water sources and the regulation of treatment and distribution. There is some overlap between the two functions, but the first is generally concerned with environmental regulation and the second deals with public health, safety, and convenience. Although the environment and public health are not referred to as specific heads of power in the Constitution, there is a history of interpretation by the courts addressing issues of constitutional responsibility for these matters. (See R. Foerster, 2002, “Constitutional jurisdiction over the safety of drinking water,” Walkerton Inquiry Commissioned Paper 2, pp. 3–14.)¹⁰³

¹⁰³ The Honourable Dennis R. O’Connor. “Walkerton Inquiry Report Part 2.” Ontario Ministry of the Attorney General. (Toronto: Queen’s Printer for Ontario, 2002), Chapter 2. <http://www.attorneygeneral.jus.gov.on.ca/english/about/pubs/walkerton/part2/>.

As noted above, there are many overlaps between the federal and provincial jurisdictions as they pertain to the environment and public health and safety. As such, neither level of government has exclusive jurisdiction over these areas.

It is now well established that neither the environment nor public health are within the exclusive jurisdiction of any level of government. Whether a particular level of government has the power to legislate depends on what aspect of the environment or public health the legislation relates to. The Supreme Court of Canada has referred to a shared responsibility. Justice La Forest, in *Friends of Oldman River v. Canada*, [1992], stated that in relation to the environment, the Constitution Act, 1867 has not assigned the matter of “environment” sui generis to either the provinces or Parliament.¹⁰⁴

Often in areas where federal and provincial jurisdictions overlap, the power cedes to the former from the latter, however, with regard to the environment and public safety, Justice O’Connor notes that in our structure of government it is not possible for these areas to be under the exclusive domain of the federal government.

To allocate the broad subject-matter of environmental control to the federal government under its general power would effectively gut provincial legislative jurisdiction... A similar shared jurisdiction has also been recognized in respect of public health.¹⁰⁵

3.3 Summary of Water Policy in Canada and British Columbia

The purveyor of water is responsible for fulfilling the terms of the Drinking Water Protection Act, namely, to provide potable water to its customers. Currently in most areas of Canada and specifically, B.C., municipal governments (legal creations of the province) are the purveyors of water. The purveyor sets rates and how they are applied (i.e. metered or flat), maintains distribution lines and maintains and monitors water quality and quantity. Municipalities can also restrict water use by creating bylaws that proscribe

¹⁰⁴ Ibid.

¹⁰⁵ Ibid.

certain uses of water for purposes other than drinking, cleaning or sanitation. For example, many municipalities impose lawn-watering restrictions during times of water scarcity in the summer months. All purveyors of water, whether a municipality or a vendor under contract, are bound by the *Drinking Water Protection Act* to provide *what the legislation considers to be* potable water.

In the event that water quality is below acceptable levels, the municipality, in coordination with the regional health authority and provincial water officer issues boil-water advisories and lifts them when the situation is remedied.

3.3.1 Federal Policy

The federal government of Canada has not much direct authority over water, except where it crosses provincial or international boundaries. The federal branch of government has direct control over water navigation, fisheries and is responsible for water on First Nation reserves. The federal government of Canada also has a direct role to play where matters of “peace, order, and good government” are concerned and when coordination with the provinces is required.

Together with the provinces, the federal government establishes water quality guidelines, which are not, however, binding requirements. In a crisis situation, it is conceivable that the federal government could override any provincial legislation that negatively impacts the “Peace, Order and Good Government” clause.

3.3.2 The Province of British Columbia

The province of British Columbia owns and controls the water that flows within its borders as defined in the terms of the *British North America Act* of 1867. The

province forms and enacts legislation that governs drinking water, though it delegates responsibility to provide it to the municipalities. Most legislation is aimed primarily at protecting sources of drinking water and at protecting public health and safety, however some legislation such as the Water Protection Act prohibit the export of bulk water.

3.3.3 International Policy

Canada has signed international conventions, such as the Dublin Principles. Where this document recognizes that water is both a “requirement for life” and an “economic good”, it stops short of declaring water to be a fundamental human right and instead, proclaims the right to access water at affordable levels. The levels of access and affordability are not defined and can vary from country to country. In Canada, affordable access means: at the tap for a few hundred dollars per year. In many parts of the world access means: ten to twenty litres per person per day, no more than a one kilometre walk away.

International treaties and laws that have a direct impact on Canada concern waters that flow through or along the Canada-United States border. The oldest treaty still in effect is the almost 100-year-old International Boundary Waters Treaty Act of 1909, which established the International Joint Commission and which still functions as the primary dispute resolution mechanism today. Most of the water treaties between Canada and the U.S. reflect common attitudes and perceptions about the relative abundance of water in Canada and acceptable uses of it.

“Americans and Canadians have a long history of more or less amiable relations on water matters, partly because the politicians of both countries saw eye to eye on the values of exploiting water and controlling recalcitrant rivers, and partly because Canada’s sheer abundance – or

perceived abundance – of water made it difficult to generate much political heat over water matters.”¹⁰⁶

Three things that could affect the cordial water relations between Canada and the U.S. are: 1. the renegotiation of treaties that have expired, or are set to expire in the near future. Of primary concern here are those that set fixed prices for hydro-electric power or have fixed volumes of water flow downstream, rather than percentages of actual flow; 2. the ever growing thirst of our southern neighbours - a demand that is threatening to surpass the U.S.’s available domestic supplies which are already either being fully exploited or polluted; 3. the temptation to fill the insatiable U.S. demand with bulk water exports. Even if properly negotiated, this could have significant impacts on the price of water in Canada and our ability to ensure that our own domestic needs are met.

3.3.4 Where Does Real Control Reside?

In practice, the purveyor of water, which is often, but not of necessity, the municipal government, has the most direct control over the cost, quality and quantity of water. Until recently, unless you had a private well or spring from which to draw your water, this was a monopolistic position – indeed one that was considered a ‘natural monopoly’. This monopoly is now challenged by new technologies and services that allow one to buy bottled water directly from a private company (albeit often a multinational corporation such as Coca-Cola) or to treat their own water at the point of use.

On paper, the province, as owners of the waters that flow within it could take direct control over all water works as a matter of public health or environmental conservation. In turn, there is nothing on paper that could prevent the federal government

¹⁰⁶ Marq De Villiers. *Water*. (Toronto: Stoddart Publishing Co. Limited, 1999), 284.

from declaring all waters to be of national interest, or essential to the “peace, order and good governance” of Canada. It could exercise its right over what has been described as a ‘natural monopoly’ because there is presumably only one source and one drinking water distribution system.¹⁰⁷

On paper, Canada retains sovereignty over the water within its boundaries and has agreements in place that manage waters that flow through or along its border with the United States of America. In practice, there is not much that Canada could do to prevent the U.S. from challenging this monopoly as a matter of *their* national interests and citing the North American Free Trade Agreement or the U.S. Manifest Destiny.¹⁰⁸

3.4 The British Columbia Waterscape

There are more than 3,300 water systems in B.C. The 96 systems in large municipalities serve close to 90% of the population. The remaining 10% is served through a variety of public and private systems such as: small municipalities (57 systems); regional district service areas (97 systems); improvement districts (211 systems); private water utilities (185 systems); water users communities (118 systems); First Nation reserves (468 systems); individual private wells and domestic licensees (est. 63,000); Others including crown corporations, industrial operations, B.C. parks and

¹⁰⁷ The Honourable Dennis R. O’Connor. “Walkerton Inquiry Report Part 2.” Ontario Ministry of the Attorney General. (Toronto: Queen’s Printer for Ontario, 2002), Ch 10, pg 279. <http://www.attorneygeneral.jus.gov.on.ca/english/about/pubs/walkerton/part2/>.

¹⁰⁸ For a more detailed listing of Provincial, Federal, and International Laws, treaties and agreements, see appendix 7.7.

private campgrounds, mobile home parks, restaurants and service stations (estimated 2100 systems). Approximately 2,000 systems have fewer than 15 connections.¹⁰⁹

There has been an admission by the government of B.C. that there are concerns with access to safe drinking water throughout the province. The beginning of the “Action Plan Action Plan For Safe Drinking Water in British Columbia” (2002) states that “stronger protection is needed” and that “health concerns must be addressed”.¹¹⁰

For most British Columbians, accessing safe drinking water is as simple as turning on the tap. But many have health concerns about the quality of their water. In August 2001, for example, there were 304 communities under boil water advisories in B.C.

[B.C.’s] Infrastructure is aging. A 1996 report on the state of Canada’s municipal infrastructure found that British Columbia’s water distribution and supply systems were, on average, the second oldest in the country and had an average age beyond the expected life span for such systems.¹¹¹

Water is essential to all humans, and indeed, to all life on this planet. Even in North America, our current infrastructure is based on late 19th Century technologies. Several recent disasters (e.g. Walkerton) have focused policymakers’ attention on this element of public infrastructure. Municipalities across the country are now being required to update their potable water collection and distribution systems.

At the same time, we have yet to control our consumption of water. In many municipalities consumers have no meters and have no incentive to conserve what is becoming a scarce resource. A typical person in the Greater Vancouver Regional District

¹⁰⁹ BC Ministry of Health Services . *Action plan for safe drinking water in British Columbia*. (Victoria, BC: British Columbia Ministry of Health Services, 2002), 2.

http://www.healthservices.gov.bc.ca/cpa/publications/safe_drinking_printcopy.pdf.

¹¹⁰ Ibid.

¹¹¹ Ibid.

(GVRD) consumes over fifty times the potable water used by the average person in a third world country.

Safe drinking water is a priority for the citizens of British Columbia. Public awareness of issues concerning both the quality and quantity of potable (drinking) water is increasing. Seasonal low water levels in the Greater Vancouver Regional District (GVRD) reservoirs, as well as periodic episodes of water contamination, have required citizens in many municipalities in B.C. to both boil and conserve their drinking water.

While we have cheap access to perfectly drinkable water, many British Columbians are avid purchasers of bottled water – now a billion dollar industry worldwide. According to a survey completed for this thesis, more than 60% of British Columbians are buying bottled water for reasons ranging from convenience, to taste, safety and purity.¹¹² A survey by the American Water Works Association Research Foundation found that 35% of respondents drank bottled water because they were worried about tap water; 7% because of taste; 35% drank bottled water as a substitute for other beverages (e.g. Pop, juice, coffee, tea, etc.); 12% because of both a concern over tap water and as a substitute beverage; while 11% cited other reasons.¹¹³

Several factors are contributing to the growth of this [bottled water] market, including baby boomers' ages coupled with their attention to fitness and health and a lack of confidence in tap water quality, especially where taste and odour are common, persistent problems. The top reason that consumers drink bottled water (or use filters, distillation or boiling)

¹¹² The full details and results of this 2003 survey of BC residents and their habits and perceptions of tap and bottled water will be discussed in Chapter 5.

¹¹³ American Water Works Association Research Foundation. "Why People Drink Bottled Water" in *The Future of Water Utilities: Water Utility Trends (AWWARF project #2604)*. (St. Paul, MN: EMA Services Inc., 2000). 1-2.

was the physical appearance of their tap water (i.e., taste, smell, color). The second reason was pollution stories in the press.¹¹⁴

The post-Walkerton policy environment is changing rapidly. Most provinces are now introducing much higher water treatment standards. Until now, British Columbia, indeed most Canadian, water systems have delivered cheap, almost unlimited supplies of water, with minimal treatment (usually chlorination and perhaps simple filtration). New drinking water policies have two major features: 1. more stringent quality requirements; and 2. higher levels of responsibility and liability placed on water system operators.

Policy formation is a communication issue. The current centralized water treatment infrastructure is a product of central planning. It is a mindset that Innis might describe as a monopoly of knowledge or what Bill Leiss would describe as the effort to dominate the natural cycle. Undoubtedly this mindset, whether conscious or not, is a factor that has, and still does, influence provincial or federal policies, such as the *Drinking Water Protection Act*. There is possibly a simple explanation for this attitude among policy pundits – it would be called “job protection.” When someone or an institution acts in this manner they are usually trying to protect or enhance their present position. This is why we have trade laws, copyright, and intellectual property legislation. To be sure, these types of laws do have a role in ensuring fair compensation, but they are constantly under siege by the more free flow and collaborative notion of “open source”.

There is a general lack of awareness regarding how much water an average Vancouverite uses – which in 2003 was over 575 litres per capita daily.¹¹⁵ According to United Nations’ data, many residents of developing countries use around 10 litres of

¹¹⁴ Ibid.

¹¹⁵ Cheryl Rossi, “West Van wades into a water meter option”, *North Shore News*, Monday, July 28, 2003. <http://www.nsnews.com/issues03/w072703/075103/news/075103nn2.html>.

water per day for all household uses – an amount comparable to one flush of a standard 12 l.p.f (litres per flush) toilet.¹¹⁶ Since most residences in the GVRD are charged a flat rate for water rather than their actual consumption metered, there is no incremental cost in consuming more water. Vancouver residents have no incentive to save water.

The GVRD has to make ever-increasing investments in infrastructure, but can save more money by providing incentives that encourage conservation than by investing in new capacity. For example, B.C. Hydro encourages conservation in order to reduce investments in new generating capacity. The GVRD already has some programs but more awareness of them is needed. Technology, can impact both policy formation and its communication and this is true for drinking water and all other policy issues. There is no sense in Canadians flushing perfectly drinkable water down the toilet, which accounts for around 30% of residential water use.

Is there a lack of communication between purveyors and consumers or a lack of policy structure? A single policy may not be suitable because of the differences in the various geographical regions. Long term planning introduced by the GVRD is supposed to be localized and community based, and should feature “bottom up” decision-making. However, the 2001 fiasco over the not-so-publicly-planned privatisation of a new filtration plant and then the reversal of the scheme in the face of broad community opposition indicated that this is little more than a rhetorical platitude.¹¹⁷ The only Canadian bid tender for the plant was passed over in favour of a multinational corporation. This plan fit in well with the notion of ‘full cost recovery’, but it did not sit

¹¹⁶ United Nations Environment Programme, “World Environment Day. 5 June 2003, *Water – Two Billion People Are Dying for It!* Key Facts about Water”.<http://www.unep.org/wed/2003/keyfacts.htm>.

¹¹⁷ David Murphy, editor and producer. (Film Documentary) “Water, Water Every Where...?” (Burnaby: Simon Fraser University, School of Communication, Media Analysis Lab, 2001).

well with many residents who felt it would be the first step in the privatisation of the whole water works system.

Those who were opposed, in effect, enabled the government to retain monopoly control over the water system, and those that favoured the plan saw it as part of an effort to ‘unbundle’ what was once a vertically integrated ‘natural monopoly’ (they owned and controlled the source, distribution, and set the price) – albeit a public one. The critical error on the part of the proponents of the project was their unwillingness to provide information to, and receive input from, the community in the policy formation stage. This occurred on the heels of the Walkerton Inquiry, at a time when public concerns over water quality were widespread across the nation and featured in the mass media.

According to David Cadman, president of the Society Promoting Environmental Conservation and former member of the GVRD, plans to privatise Vancouver's water had been going on behind closed doors since 1995. All the while, the rhetoric of governments at all levels promised more local and community involvement at all stages of the decision making process.¹¹⁸

¹¹⁸ Gavin Wright. “Public pressure stops water privatisation” *The Peak*, volume 108, number 9. July 3, 2001. *e.Peak News*. <http://www.peak.sfu.ca/the-peak/2001-2/issue9/ne-gvrhdh2o.html>.

CHAPTER 4

MONOPOLIES OF KNOWLEDGE IN BRITISH COLUMBIA'S NEW WATER POLICY AND LEGISLATION: A CRITIQUE OF DRINKING WATER RISK COMMUNICATION POLICY AND ITS FORMATION

This chapter first examines drinking water risk communication practices and whether or not methods such as boil-water advisories fulfil the legislated obligation of purveyors of water to provide potable water. It then critiques the B.C. Drinking Water Review Panel's recommendations and the resultant New Drinking Water Protection Act of B.C. This analysis will be used to determine if, in the aftermath of Walkerton, the present government has incorporated notions of community involvement and increased communication both in the arena of public policy formation and public health and safety, or if it has inclined towards maintaining a monopoly of knowledge despite recent water related incidents.

4.1 Water Risk Communication

“Water management, which is what we do on a daily basis, deals inherently with uncertainties in supply and demand and with managing rapid change; the key is therefore institutional reform (making managers better able to respond) rather than engineering solutions to problems that might not ever exist.” Eugene Stakhiv, US Army Corp of Engineers.¹¹⁹

The foundation of good water policy is not just sound and sustainable science and technology – it is communication. An over reliance on the former to the neglect of the latter can, and has had tragic consequences.

¹¹⁹ Marq De Villiers. *Water*. (Toronto: Stoddart Publishing Co. Limited, 1999), 107.

“As angry as Berberich is over what happened to her family, she is even more disturbed for a friend who lost a child in the E. coli disaster. ‘If the bad water tests had been reported, the child wouldn't have become ill.’”¹²⁰

The above excerpt tragically underscores the position that good public policy is not so much a function of science and technology, but rather, successful or failed public policy is a direct result of communication or lack thereof. The contamination of Walkerton's water supply may only have been preventable with 20/20 hindsight. Incidents happen; it could be source contamination, or the result of a natural disaster, or accidental or deliberate human action. However, what is more important than the plan of what to do when something goes wrong is that the plan actually be followed. The tragedy at Walkerton could have been avoided if “... the bad water tests had been reported”¹²¹, and the test results simply been communicated.

Information plays a critical role in all phases of disaster reduction activity from hazard identification and risk assessment, through mitigation, preparedness, response and recovery... Consequently, it is vital that those involved in disaster reduction activities be given access to the widest possible range of information pertaining to such hazards and associated risks. Once such information has been collected, interpreted, evaluated and critically analysed, it is equally important that disaster managers be given access to the most effective means through which to communicate results to colleagues, policy makers, practitioners, and most importantly, when those warnings must be issued – to the public and emergency responders. In this way, information exchange becomes the basis of progress towards reducing the effects of disasters in all societies.¹²²

What is an acceptable level of risk when it comes to drinking water? Does it vary depending on where you live? Not many would consume a clear liquid of that which they know nothing about. If a person were given a bottle of water and told that it could

¹²⁰ John Miner. “Walkerton mom slams charges.” *Canoe* (On-line magazine) April 24, 2003. http://www.canoe.ca/EcoliTragedy/030424_charges2-sun.html.

¹²¹ Ibid.

¹²² Professor Peter Anderson, “Future opportunities for communication for disaster reduction at community level.” 185.

potentially be contaminated with a slight amount of ‘xyz’ with the possibility of producing adverse side effects, would that person drink it? It would be very unlikely. The initial impulse would be that there is no acceptable level of risk for drinking water. Yet many people drink water every day without knowing the contents and their various levels in the water, while others drink water they know is less than acceptable, but continue to do so because they are either unable or unwilling to change. Different individuals have different tolerances, whether physical, as in the case of one with a compromised immune system, or mental, as in those who tolerate imperfections because they *perceive the risk to be* minimal. The converse is also true, many may have a physical tolerance above official guidelines and many perceive the risk to be much higher than it actually is.

To pursue a policy of zero risk may score political points, but it is an almost impossible goal that will likely result in either a preponderance of false-positives (meaning that a report of poor quality is incorrect) or false negatives (meaning that a report indicating good quality is incorrect). The risk of false positives is that the public may be unduly alarmed or become complacent to water warnings. The risk of false negatives is that a contamination could go undetected and public health and safety compromised. Accordingly, both false positives and negatives must be taken into account when adopting a risk communication strategy.¹²³

Risk management needs to maintain a healthy tension based on considering the likelihood and consequences of both false positive and false negative errors, seeking an appropriate balance between these

¹²³ Steve E. Hrudey and William Leiss, “Risk Management and Precaution: Insights on the Cautious Use of Evidence”. *Environmental Health Perspectives*, Volume 111, number 13. October 2003. <http://www.leiss.ca/articles/126?download>.

opposite outcomes, rather than zealously seeking the absolute elimination of false-negative errors in a futile search for zero risk.¹²⁴

Again, accidents occur, systems degrade, and water contaminations or shortages will happen. How we react in order to mitigate the risks to public health is through a better concentration of resources rather than trying to eliminate all risk, even though many in our technologically mediated age of the rule of science may believe that attaining a level of zero risk is achievable.

The Federal–Provincial–Territorial Committee on Drinking Water updates and produces annually the “Guidelines for Canadian Drinking Water Quality”.¹²⁵ It contains maximum acceptable levels of a wide assortment of substances that can be found in Canada’s drinking water and has maximum allowable limits that can be contained in bottled water. To go through the list of items found in our water would make the average person with a rudimentary understanding of chemistry run to a doctor for a toxin test. It is a safe assertion that the average person does not know what, besides H₂O and perhaps chlorine, is in the water, how much of it is safe, and how much of it is in their direct water supply (i.e. what comes out of their tap).

Identified in the survey conducted for this thesis are three types of attitudes that seem to prevail with respect to tap water in B.C. Some believe the water is better than it is and drink it without any special precautions. Some believe it is worse than it is, and never drink water that is not bottled, boiled or filtered at the tap. Others suspect that there may be issues with the water but either do not care or do not have the means to choose

¹²⁴ Ibid.

¹²⁵ Federal–Provincial–Territorial Committee on Drinking Water. “Summary of Guidelines for Canadian Drinking Water Quality.” (Ottawa, Ontario, Canada. Health Canada, 2004). <http://www.hc-sc.gc.ca/hecs-sesc/water/pdf/summary.pdf>.

other options. We are led to believe that B.C. has some of the finest, unspoiled drinking water in the world, and that it requires little treatment if any. When comparing the water that is available out of the tap in the Vancouver Lower Mainland to that in other more water-scarce regions, this is not an unreasonable position to hold, and many believe this proposition without testing what comes out of their own tap. However, a 1999 B.C.

Auditor General report

.... examined a number of clean, natural sources of water and concluded that virtually all of the sources examined were under threat from human activity. This is not to say that there are not legal and planning mechanisms in place to protect drinking water.¹²⁶

In 1999, many people feared a breakdown of computers due to the “millennium bug” which was predicted to cause computers to turn back their internal clocks to 1900 instead of advancing to the year 2000. Patches and fixes were developed and deployed and, in the end, due to the successful communication of risks and actions to mitigate a crisis, a large-scale crisis was averted. Then in May 2000, the Walkerton E. coli water contamination killed seven people and made over twelve hundred ill. At the dawn of the 21st Century, most accepted that there were inherent risks with new technology, but few would have imagined that we would also have to be concerned with an issue that was believed to have been solved with the first water treatment facilities of the late 19th Century. In a crude twist of McLuhan’s concept of *recorso* (retrieval), what was old (waterborne pathogens and disease) was new again. The safety of drinking water could no longer be taken for granted, nor could one assume that those in charge could mitigate all hazards that could affect the supply. What is most troubling about the Walkerton crisis is how

¹²⁶ West Coast Environmental Law. *BC Guide to Watershed Law and Planning*. BC Watersheds. “Water Quality (Drinking Water)”. <http://www.bcwatersheds.org/issues/water/bcgwlp/j17.shtml>.

could such serious breakdowns in communication occur? It was a defining moment where the public's faith in authority's ability to provide basics, would thereafter be questioned.¹²⁷

In its final report, B.C.'s Drinking Water Review Panel which was assembled after the Walkerton crisis, noted that:

The Annual Report of the Provincial Health Officer (2001) concluded that "the public has a right to know the results of monitoring their water supply" and goes on to say that this is required for public accountability and that it is common in other jurisdictions (e.g., the US Safe Drinking Water Act requires mandatory annual reports by water suppliers to the consumers about the water they provide.) Large water purveyors and health regions (e.g., in Greater Vancouver, Greater Victoria, and the Fraser Valley) are now making information available on the internet, but this is not done consistently around the province or by smaller purveyors.

The Panel believes the public has the right to know about the state of their water, and the ability to compel authorities to act to protect water quality. The Panel believes that water purveyors should provide local authorities and the public with easy access to information about water quality.¹²⁸

The panel's "Recommendation 21" sought to have this 'community right to know' (note: not stated here as a *consumer* right, but one relating more to *human* rights) entrenched in the proposed Drinking Water Protection Act. In effect, this recommendation sought to break the monopoly of knowledge over water quality, and make it accessible to those most affected – the users and ratepayers.

At present, water risk is communicated to the public in a *passive* manner. The information can be found in government publications such as the "Drinking Water Protection Act" but you have to look for it. Similarly, each municipality or water purveyor now publishes water test results from the past year, but again you would have to

¹²⁷ Canadian Broadcasting Corporation. *The National*, Broadcast Date: June 26, 2000
Commentator: Rex Murphy. http://archives.cbc.ca/IDCC-1-70-1672-11518/disasters_tragedies/walkerton/.

¹²⁸ BC Ministry of Health Services. "Drinking Water Review Panel - Final Report." February 2002. 27.
http://www.healthservices.gov.bc.ca/protect/pdf/dwrp_final.pdf.

look for them. Since 2001, the GVRD has, posted the previous day's water turbidity report on their website, but the tests are conducted at the three water reservoirs only – they are not done past the point of treatment. The only active means of communicating water quality directly to the public can be found in *The Vancouver Sun*, which gets its “Turbidity Report” from the GVRD website, but this does not give an indication of the quality of water after it comes out of a person's tap.

The Vancouver Sun Water Turbidity report lists the level of ‘NTUs’ in the water supply from the tests of the previous day. The NTU (nephelometric turbidity unit), guidelines were established on the basis of health considerations but also consider aesthetic considerations such as appearance, taste and odour.

Health Canada's guideline recommends a maximum acceptable concentration (MAC) of 1 NTU at the point of distribution and 5 NTU at the point of consumption. At levels above 1 NTU extra treatment may be introduced and a level over 5 NTU could warrant a boil-water advisory. Higher turbidity levels at the water source “may be permitted if it is demonstrated that the system has a history of acceptable microbiological quality and that a higher turbidity value will not compromise disinfection”.¹²⁹

Excessive turbidity detracts from the appearance of treated water and can interfere with disinfection processes and the maintenance of a chlorine residual. It can serve as a source of nutrients for micro-organisms as well as interfering with their enumeration. The adsorptive properties of suspended particles can lead to a concentration of heavy metal ions and biocides in turbid waters. Turbidity has also been related to trihalomethane formation in chlorinated water. In addition, turbidity has often been associated with unacceptable tastes and odours.¹³⁰

¹²⁹ Health Canada. “Turbidity Guideline”. Updated October 1995. Retrieved from: http://www.greenclub.bc.ca/Green_Club_Activity/Green_Club_Web/Participation_Record/Safe_Water/Turbidity_Guideline/turbidity_guideline.htm.

¹³⁰ Ibid.

Seemingly to contradict the above, the GVRD's web page 'Turbidity Info' – where the daily GVRD Turbidity readings are posted - indicates that high levels of turbidity are largely an aesthetic concern.

Testing has shown that during periods of higher turbidity, coliform bacteria counts don't increase in Lower Mainland.¹³¹

By contrast, on Thursday, March 3, 2005, *The Vancouver Sun's* Water Turbidity report that gave the readings taken on March 1st (a day where the Capilano reservoir Turbidity reading was 1.7 NTU, the Seymour reservoir was at 0.73 NTU and the Coquitlam reservoir was at 0.98 NTU) stated that:

Turbidity may affect disinfection. There is no safe / unsafe level of turbidity, but levels of 1 NTU ... prompt increased disinfection. At levels over 5 NTU an advisory may be issued.¹³²

The next day's turbidity report for March 4th that gave the March 3rd readings of 1.9 NTU for the Capilano reservoir, 0.76 NTU for the Seymour and 1.0 NTU, provided a less alarming qualifier and stated only that, "Turbidity may affect disinfection. At levels over 5 NTU and advisory may be issued."¹³³

Although the GVRD's turbidity web page downplays the any health-related effects of high levels of turbidity and *The Vancouver Sun* only indicates what *may* happen when turbidity exceeds Health Canada's MAC guidelines, it is interesting that the GVRD and *The Vancouver Sun* only started to publish this information after the 2002 release of a report in 2000 by Health Canada entitled *Drinking Water Quality and Health-Care*

¹³¹ GVRD, *Water, Quality and treatment*, "Turbidity". November 21, 2005. <http://www.gvrd.bc.ca/water/default.asp>.

¹³² *The Vancouver Sun*, Thursday, March 3, 2005. F12.

¹³³ *The Vancouver Sun*, Friday, March 4, 2005. C6.

*Utilization for Gastrointestinal Illness in Greater Vancouver.*¹³⁴ This study clearly indicated a causal link between water turbidity and Gastrointestinal Illness.

The results of this study are consistent with the findings of a number of epidemiologic and microbiologic studies carried out across North America and support several public-health and water-supply management beliefs: (1) significant levels of endemic (day-to-day) gastroenteritis events are potentially waterborne in nature, (2) watershed protection together with chlorination may not adequately protect against the waterborne transmission of enteric pathogens, and (3) turbidity appears to be a valuable water quality indicator.¹³⁵

A number of questions arise here. What and whom is one to believe? What courses of actions should an individual take given this seemingly contradictory information? Why are the MAC turbidity levels established by Health Canada based on health considerations but posted by the body responsible for drinking water and the local media for mere aesthetic values? Is there some sort of liability issue at play?

A December 15, 2004 article in *The Province* entitled “Don’t drink turbid, brown water” provides sound, albeit obvious, advice, but for only extreme situations, and also downplays the risk of turbid water to human health.

We know bacteriologically it’s always been safe but I still don’t recommend you drink brown water, said [Dr. John Blatherwick, medical health officer for the Vancouver Coastal Health Authority], who favours bottled water over boiled or brown water.¹³⁶

The day prior to this article by an unnamed staff reporter, the Capilano reservoir’s turbidity reading was at 2.8 NTU, but the Seymour was at a whopping 24 NTU and

¹³⁴ Bill Morrell, GVRD Water Communications officer. Telephone Conversation (unrecorded), Friday, March 4, 2005.

¹³⁵ Canada Communicable Disease Report, *Drinking Water Quality and Health-Care Utilization for Gastrointestinal Illness in Greater Vancouver*, Volume 26-24, December 15, 2000. <http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/00vol26/dr2624ec.html>.

¹³⁶ *The Province*, “Don’t drink turbid, brown water.” Wednesday, December 15, 2005. A28.

resulted in brown water flowing from the taps.¹³⁷ One doesn't have to be a hydrological expert to know to avoid drinking brown water, but one may have to be well versed in semiotics to decode the 'only-an-aesthetic-concern' message that seems to be being promulgated by the GVRD officials.

This information on water turbidity is not published in the other GVRD daily, *The Province*. In the summer months, those living in the GVRD, as in other major metro areas, often hear "Air Quality Reports" broadcast, but the only time they hear about water quality is when advised to boil it. For some, this may be beyond the level of comfort or acceptable risk. Past water tests are to be made available, but not in a timely fashion.

11 For the purposes of section 15 (b) of the Act, a water supplier must prepare and make public, within 6 months of the end of the calendar year, an annual report of the results of the monitoring required by this regulation, its operating permit or the drinking water officer.¹³⁸

Would it be a comfort to know that over the last year GVRD drinking water approached a level just under the point when a boil-water advisory would be issued, but no public notice was given because the level had not yet been reached? Would it matter to the average citizen if it happened once, twice or regularly?

Water quality tests, from all areas of the system, not just at source, should be made public as soon as they are known, even if published only on the web. This could be achieved by simply adding the web posting of test results to the flow of information that should be part of a coordinated monitoring regime. If safe drinking water is a public health issue, then being part of provincial jurisdiction, it is in the province's interests,

¹³⁷ Ibid.

¹³⁸ BC Ministry of Health Services. "DRINKING WATER PROTECTION REGULATION, Schedule A: Water Quality Standards for Potable Water", *Drinking Water Protection Act*. Victoria, BC, Canada: Queen's Printer, 2004. http://www.qp.gov.bc.ca/statreg/reg/D/200_2003.htm#schA..

both legally and morally, to ensure that while delegating most of the operations it still maintains cohesive control through a regulatory monitoring process.

As Peter Anderson has noted, all appropriate and available means of communications must be employed when communicating risk. When water quality bulletins are published and/or broadcast, it must be in a manner that is meaningful and easily understood, for some may choose an alternative to tap water as soon as they see the water quality level sliding, while others will not be concerned until an official pronouncement is made. As it stands now, we have no option but to rely on those entrusted with the management of the public water system or on those who monitor the water quality of privately supplied water products, to let us know of any potential problems in a timely fashion. Though we have no reason to believe that those in charge of the GVRD system would fail in this regard, we do, unfortunately, have examples in other Canadian jurisdictions where the citizens do have reason to wonder about the monitoring of their water quality. Walkerton comes immediately to mind, but other places closer to home have also had a history of troubled waters.

In addition to requiring that all purveyors of water monitor water quality and immediately report any risks to human health, the Drinking Water Protection Act should insist on continual active communication of risks to water quality. The current practice of passively posting the information on a website is a handy reference tool, but only if citizens are aware that it is there and is accessible to them.

Water quality affects both water-rich and water-poor areas. It doesn't do any good to have an abundant supply if it is not fit to drink. One only has to look at areas affected by natural disasters to realize that an emergency situation could easily arise with the

contamination, disruption or severe shortage of the water supply - all of which could result from a variety of causes. Some of these include: natural occurrences like floods or droughts, earthquake, contamination due to wildlife, livestock or human waste, or contamination due to accidental or deliberate pollution of the water supply.

There are several types of risk to water that one must consider in either an initial risk assessment of a water source or the continued monitoring of it. According to the World Health Organization's "Guidelines for Drinking Water Quality", one must consider overall health outcomes when assessing levels of risk.

For these purposes, only the health effects of waterborne diseases are taken into account.¹³⁹ Water quality is one type of vulnerability faced by citizens, but it is not the only factor to be concerned about. In the section on surveillance of the water system (an integral part of a Water Safety Plan) the World Health Organization document identifies the key areas that one must consider with any water system. They are:

- **Quality**: whether the supply has an approved WSP that has been validated and is subject to periodic audit to demonstrate;
- **Quantity** (service level): the proportion of the population using water from different levels of drinking-water supply (e.g., no access, basic access, intermediate access and optimal access)
- **Accessibility**: the percentage of the population that has reasonable access to an improved drinking-water supply;
- **Affordability**: the tariff paid by domestic consumers; and
- **Continuity**: the percentage of the time during which drinking-water is available (daily, weekly and seasonally).[emphasis added]¹⁴⁰

The risks of poor water quality are obvious – widespread sickness and disease would not only have an effect on public health but also the economy and the overall well-

¹³⁹ World Health Organization. "Guidelines for Drinking-water Quality. Vol. 1 : 3rd ed." (Geneva, World Health Organization, 2004), Section 3.3.2-45. http://www.who.int/water_sanitation_health/dwq/en.

¹⁴⁰ Ibid., Section 5.3-90.

being of society. The risks related to the quantity of water are twofold – not enough water will result in drought, but conversely, too much will yield flooding. The accessibility to clean safe water relates to what length one has to go to get water. For most in North America, one simply has to turn on a tap. In some developing nations, water could reach all households, but the willingness of the provider or the cost of being connected are often prohibitive, and many either find a less-safe source or illegally tap into the supply lines. The risks of water being unaffordable for all means, again, that some will choose unsafe sources or, as happened in Bolivia, will choose to hit the streets in protest. The lack of continuity of a water source affects a communities' long-range sustainability. In short, all of these factors must be assessed and monitored independently as parts of an integrated system.

The level of acceptable risk depends on the particular circumstances of the situation and of the individual user. For example, one's level of tolerance for the quality of water may depend on their accessibility to an alternate source. The accessibility may depend on the quantity of the source or its affordability.

The small B.C. town of Fruitvale recently had an almost ten year boil-water advisory lifted by their regional health unit. Presumably, some would still be sceptical of the water coming from the new treatment system or still have the ten-year habit of boiling or using alternative sources. One also wonders how the community could tolerate continuing to pay for water that was not potable, or wonder why they wouldn't demand a new treatment system sooner. Here again people's perceptions and attitudes prove to be the determining factor that can often conflict with the presumptions of both the policy planner and the researcher.

Because of the longevity of the boil water advisory, do people still boil their water or do they buy bottled water en masse? Also, did residents now drink tap water? Did residents of Fruitvale pay the full price for their water during the time of the advisory?

The answers provided by the Mayor of Fruitvale revealed something completely unexpected. Yes, several people appeared to be drinking bottled water, but no, not too many are boiling the water. The Mayor's answer to whether people now drank tap water was that, "They always did!" When asked for clarification, she explained that the majority of the residents, including her, did not perceive the boil-water advisory to be necessary in the first place. Many were surprised that the advisory was issued and that it was maintained for so long. People felt that because they had always drunk the water without cause for concern, new regulatory guidelines wouldn't change it. There was more concern for potential negative impacts from chlorination and the deterioration of piping. The old pipes were leaking water and thus affecting the overall cost.¹⁴¹

What took so long for the boil water-advisory to be lifted was not, as one might first expect, due to a lack of municipal political will or lack of cash, but was due to the residents not sharing the concerns of the health officials, and hence not seeing why they should pay more to get a treatment system when few believed it necessary. It should be noted that there was faecal matter present in the water system, but there was more concern over the perceived ill effects from chlorination.¹⁴²

The mayor noted that some residents did move out because of the boil-water advisory and some did not move in to the community because of it, but by and large,

¹⁴¹ Mayor Libby Nelson of Fruitvale, BC. Telephone Conversation (unrecorded), January 30, 2005.

¹⁴² Ibid.

most drank the water and were opposed to an additional tax levy to install a new treatment system. From a point of liability, the mayor felt that the obligation to provide potable water was met through the issuing of the boil-water advisory, and there was no reduction in the water utility rate over the time of the advisory. In the opinion of the residents, the water was fine as it was and did not require treatment or further filtration. They did agree that piping would need to be replaced in order to stop waste through leakage. From the health unit's point of view, however, the situation was not acceptable and the boil-water advisory would stay in place until a new system was installed and the water tested within the acceptable parameters. With the passing of the new Drinking Water Protection Act, this lack of remedial action on the part of the community could be construed as an illegal contravention of the Act.¹⁴³

The situation could have continued had the health unit not posted a sign outside the entrance to the town advising that the water was not fit for human consumption. The sign, in turn, began to tarnish the image of this small town, and it was the sign that eventually forced the residents into getting a new system that not only employed filtering but chemical (chlorine) treatment as well. The higher provincial authority forced the local hand: the new system was installed and the advisory and sign were removed.¹⁴⁴

The above story illustrates a problem. Who is ultimately responsible for providing safe drinking water? If it is the government, can they force their position on a populace? If the individual citizen is responsible, to whom can they appeal when the system

¹⁴³ Ibid.

¹⁴⁴ For other stories of local-provincial conflicts over water treatment standards see: The Canadian Broadcasting Corporation. *The National*, Jan. 18, 2002. Host: Alison Smith, Reporter: Kelly Crowe Guest(s): Rob Patterson, Hans Peterson, Dave Wilson. http://archives.cbc.ca/IDC-1-70-1672-11530/disasters_tragedies/walkerton/clip12.

degrades or fails? A public authority must take the approach that it is responsible for providing safe water to its citizens, but it must stop short of forcing them to take it. If the authority issues an alert based on sound practices and the public does not heed these warnings, the public authority should be absolved of any responsibility. However, if the authority issues the guidelines but does not guarantee the funding to meet them, then should the authority be held to account if the affected population wants to correct their situation but cannot afford to?

This is the dilemma faced by many B.C. municipalities. The cost of meeting the new guidelines of the Drinking Water Protection Act are unattainable under current operating finances. As a result, many communities throughout the province remain under a boil-water advisory. This could mean that the purveyors of water for these areas will be in contravention of the Act until their systems are fixed according to its current standards.

4.1.1 Boil-Water Advisories and the Obligation to Provide Potable Water.

The bottom line of B.C.'s Drinking Water Protection Act is that a purveyor of water must deliver potable water. If, for example, the quality of water declines and the maximum allowable concentration (MACs) of total faecal coliform is exceeded, a boil-water advisory must be issued and kept in place until the problem is fixed. When asked if boil-water advisories fulfilled its responsibility to deliver potable water, the Mayor of Fruitvale said that in her mind it did.¹⁴⁵ However, the Act clearly defines "potable" as: "water provided by a domestic water system that (a) meets the standards prescribed by regulation, and (b) is safe to drink and fit for domestic purposes *without further treatment*,"¹⁴⁶

¹⁴⁵ Ibid.

¹⁴⁶ Drinking Water Protection Act, (Victoria, BC, Canada: Queen's Printer, 2004).

If a user must boil water before consuming it, they are treating the water further. Technically speaking, if a boil-water advisory must be issued, the operator of the system is not able to provide potable water *without further treatment*, as the Act requires.

Current official wisdom maintains that boiling water will make it fit for human consumption in most cases but it is not a cure all, especially for those with compromised immune systems. Further, boiling water before drinking it could actually have the reverse outcome and make the situation worse.

“Boiling water is the cheapest way to kill bacteria in your water. It is also very effective. However, Thomas warns, people should be aware that boiling will only disinfect water. For problems like lead, boiling will actually concentrate it.” (Dr. Barry Thomas, former Health Canada toxicologist)¹⁴⁷

Is the owner of a water system obliged to provide an alternate source such as bottled water or a home water treatment system or is this up to the individual to ensure that they have a water source that meets their particular needs? If one interprets the Drinking Water Protection Act literally, it is the water provider’s obligation, but in practice, users take this on themselves and the dramatic rise in the sales of bottled water and home filtration equipment is evidence of this. According to the Canadian Environmental Law Association, “in Canada per capita consumption has risen from 14.6 litres per person in 1994 to about 15.8 litres per person in 1998.”¹⁴⁸ In 2001 the Canadian bottled water market increased by 12% over 2000. In 2002, just after the significance of the Walkerton crisis had registered, bottled water sales increased by a whopping 42%,

¹⁴⁷ Ines Colabrese and Mike Gordon. “Shopping for home water filter systems.” *CBC Marketplace*. Broadcast: November 14, 2000.

<http://www.cbc.ca/consumers/market/files/home/waterfilters/shopping.html>.

¹⁴⁸ Canadian Environmental Law Association. “Bottled Water FAQs” (2004). www.cela.ca.

and the increase in 2003 over 2002 was 14%.¹⁴⁹ The home water filtration market has witnessed similar increases over the same period. In addition to the dramatic increase in the size of the Canadian bottled water and home water treatment market since Walkerton, there has also been a dramatic rise in the number of boil-water advisories issued.¹⁵⁰

What appears to be happening in the post-Walkerton Canadian waterscape is that governments are acknowledging that there is a problem with water quality in Canada and most are taking remedial action with improved legislation, regulation and treatment but the potential costs of meeting the new regulations are staggering and available funds at any level are in short supply. This is not resonating with the public as users are taking matters into their own hands and either treating their own water or choosing an alternative to what comes out of the tap – as long as they can afford to do so.

4.2 Critique of British Columbia's New Water Policy and Legislation

Water wars can be grand clashings in the international arena. They can also be fought on a small but ferocious scale, with blizzards of paper as ammunition and cadres of bureaucrats as foot soldiers.¹⁵¹

This section will take a critical look at the most current drinking water legislation in British Columbia and the process through which it was formed.

¹⁴⁹ International Council of Bottled Water Associations. http://www.icbwa.org/2000-2003_Zenith_and_Beverage_Marketing_Stats.pdf.

¹⁵⁰ Safe Drinking Water Foundation. "Boil Water Advisories for British Columbia", <http://www.safewater.org/>.

¹⁵¹ Marq DeVilliers, *Water*. (Toronto: Stoddart Publishing Co. Limited, 1999), 87.

4.2.1 Final Report of the Drinking Water Review Panel - February 2002

The Drinking Water Review Panel was convened to put a public face on the legislative process in B.C. It was part of the Liberal government's 'New Era' of openness. One of the greatest concerns with B.C.'s Drinking Water Protection Act is related to funding issues and who will pay for the necessary upgrades to make all systems compliant with the Act. Without sufficient funding it is feared that some areas will not make what are considered to be necessary upgrades and put their populations at risk.

Funding issues are most acute for small water systems because typically they do not have capital reserve funds for maintenance, replacement and upgrades of water supply infrastructure (especially a concern given the number of old and deteriorating systems in the province) or for system expansion. Meeting requirements of the DWPA will add to the cost of providing drinking water (e.g., monitoring, assessments and operator certification).

A related issue is that many small systems and all Improvement District systems, which service anywhere from a few to several thousand water users, do not have access to senior government infrastructure grants or low interest-rate debt financing services provided by the Municipal Finance Authority. The inability of these systems to maintain, upgrade and expand their systems is putting the safety of their drinking water at risk.¹⁵²

Funding for the necessary improvements seemed to be viewed by the Panel as a government responsibility, and participants in the review expressed concerns that a government bent on cost cutting would open the water system to privatisation which was perceived by many to be a threat to public safety (i.e. that the profit motive would promote corner-cutting, raise costs to consumers, or both). In addition, there was a question of how many more people were willing to pay for a service that they did not necessarily trust or even use, as many now used alternatives to the government supply.

¹⁵² BC Ministry of Health Services. "Drinking Water Review Panel - Final Report." February 2002. 28-31. http://www.healthservices.gov.bc.ca/protect/pdf/dwrp_final.pdf.

The irony is that the perception of bottled water as a safer alternative is also based on trust, but in a corporation rather than a government.

In 1996 it was estimated that households were paying an average of \$250 per year for water.... Using the 1996 Canadian average rate of domestic water consumption (327/litres per day) and the 1996 average cost (\$250/year), we were paying about \$0.002 per litre for tap water.

Today people line up to pay \$2.00 for half a litre of bottled water (that has even fewer regulatory checks and balances for water quality than most tap water)... given the increasing sales of bottled water and in-home water filters, people are willing to pay much more for water they *believe* is safe.¹⁵³

The panel went on to say that “British Columbians are using too much water and paying too little for it. At present, fees paid by water users are not adequate to cover ongoing infrastructure costs or the costs associated with ensuring that the drinking water is safe.”¹⁵⁴ This observation seems to fit well with one of the guiding principles of the new Act (i.e. that users will be paying more) and with the recent promotion of metering as a demand-management tool, but is in stark contrast with the opinion of those that believe we live in a rainforest with an infinitely replenished supply.

While the Review Panel noted the apprehension of some who felt that the province was ideologically moving towards a public-private partnership, or “p-3”, model for the building and operating of water supply infrastructure, it did not specifically examine the issue of privately run drinking water systems.¹⁵⁵ As such the door for this policy option does remain open.

¹⁵³ Ibid.

¹⁵⁴ Ibid.

¹⁵⁵ In theory, public-private partnerships or p-3 projects, are ones where “the public sector maintains an oversight and quality assessment role while the private sector is more closely involved in actually delivery of the service or project”. (Source: Industry Canada, Public-Private Partnership (P3) Office. About P3s. What is a P3? http://strategis.ic.gc.ca/epic/internet/inpupr-bdpr.nsf/en/h_qz01546e.html.)

... the Panel focused efforts on ensuring that the appropriate checks and balance are in place to ensure accountability and adherence to strict standards, no matter who is building or operating drinking water systems, and recommends other ways to acquire funds needed for infrastructure.¹⁵⁶

In its recommendation for the development of a cost-sharing system, the Panel saw different sources such as the provincial government, industrial resource users, licence holders and residential users. What they failed to recognize was that governments run on taxes and corporations, public or private, are run off of consumer revenues, and in the final analysis, the taxpayer and the consumer are one and the same.

One principle of the new water management mantra is “full cost recovery”; it is favoured by institutions such as the World Bank when making its water and sanitation development loans, and seems to be biased toward the notion that water is an economic commodity. The Review Panel recommended that in addition to increasing the rates to users, surcharges should be placed on land uses, such as farming and forestry, which could, and did, negatively impact a watershed. This compensatory approach does not prohibit potentially negative activities in and around watersheds but, instead, sends the signal that cash can mitigate these activities.¹⁵⁷

Another problem that the Review Panel attempted to address was which systems will be upgraded first? In Recommendation 24, which calls for development of a comprehensive infrastructure-funding program, the first task is to perform a risk assessment and create a risk management plan for the upgrades.¹⁵⁸ As no drinking water

¹⁵⁶ BC Ministry of Health Services. “Drinking Water Review Panel - Final Report.” February 2002. 28-31. http://www.healthservices.gov.bc.ca/protect/pdf/dwrp_final.pdf.

¹⁵⁷ Ibid.

¹⁵⁸ Ibid.

systems were found to be without risk, it becomes a question of identifying which populations face the most risk and convincing the others that it will be safe for them to wait.

4.2.2 The 2003 Drinking Water Protection Act of B.C.

The amended *Drinking Water Protection Act* and regulations came into effect May 16, 2003, and replaced the Safe Drinking Water Regulation under the *Health Act*. This new Act is meant to protect Drinking Water from “source to tap” and is centred on the eight guiding principles as developed in the Action Plan for Safe Drinking Water in British Columbia.¹⁵⁹ These eight Safe Drinking Water principles are as follows:

1. The safety of drinking water is a health issue.
2. Source protection is a critical part of drinking water protection.
3. Providing safe drinking water requires an integrated approach.
4. All water systems need to be thoroughly assessed to determine risks.
5. Proper treatment and water distribution system integrity are important to protect human health.
6. Tap water must meet acceptable safety standards and be monitored.
7. Small systems require a flexible system with safeguards.
8. Safe drinking water should be affordable, with users paying appropriate costs.¹⁶⁰

In a speech to the B.C. Water and Wastewater Association’s Annual General Meeting, April 28, 2002, the Minister of Health Services at the time, The Honourable Colin Hansen, detailed these principles, which guided the white paper and drafts of the new Act and accompanying regulations.¹⁶¹

¹⁵⁹ BC Ministry of Health Services. “New Drinking Water Legislation Now in Force.” <http://www.healthservices.gov.bc.ca/protect/water.html>.

¹⁶⁰ British Columbia. Ministry of Health Services. “Action Plan For Safe Drinking Water In British Columbia.” (2003). http://www.healthservices.gov.bc.ca/cpa/publications/safe_drinking_printcopy.pdf.

¹⁶¹ Colin Hansen, Minister of Health Services, “British Columbia’s Action Plan for Safe Drinking Water,” (Excerpt from speaking notes from B.C. Water and Wastewater Association Annual General Meeting, April 28, 2002, Penticton, BC), 4. http://www.healthservices.gov.bc.ca/protect/speech_drinking_water.pdf.

Before looking at these eight principles in detail, it is interesting to note and elaborate on some of the recommendations from stakeholder consultations that are not being implemented in the new act.

For example, some of the stakeholders we heard from wanted comprehensive, mandatory treatment requirements, including filtration.

Others asked us to introduce mandatory prescriptions around chemical levels that follow the national guidelines.¹⁶²

Minister Hansen went on to say that: “You won’t see either of these when the amended Act and regulations come into force. These prescriptive measures simply were not consistent with our outcome-based focus.”¹⁶³

At first glance one wonders why a blanket policy of treatment and filtration would not be a welcome preventative measure. In reality however, this type of blanket policy could do more harm than good. Do sources that meet quality and safety requirements without treatment or filtration need it? What would such a policy do to the natural spring water market if these sources of water were treated and filtered thereby rendering their natural pristine state irrelevant? What about concerns of chemical contamination from a build up of chlorine residues? In Alberta, the regulations require the treatment and filtration of all water supplied to the public. While this may seem to be a reasonable safeguard it can add unnecessary costs to a small system that may not require it. If a supply or system shows test results that consistently confirm the quality and safety of the source why treat it? The answer could be that ‘it is better to be safe than sorry’. It could also be that post-Walkerton, governments are vitally scared of litigation or worse (i.e. political meltdown at the polls) for failing to provide safe drinking water or failing to

¹⁶² Ibid.

¹⁶³ Ibid.

adequately monitor the system; hence, this ‘shotgun’ approach of treating and filtering all water no matter the status of the source. This should be called the CYA (cover your ass) approach to water quality management.

There is, perhaps, more potential concern regarding why this B.C. government opposed the introduction of “mandatory prescriptions around chemical levels that follow the national guidelines”. It might be that there is disagreement on the acceptable levels for these, or perhaps it was due to an inability to track and monitor chemical levels consistently.

According to the Act, B.C. is to implement a system that would allow Water Officers, who are by definition Health Officers, to tailor specific systems and to provide an “increase in the basic expectations around assessment, certification, monitoring and reporting on water quality.”¹⁶⁴ This approach treats each system as unique and as such, it will be easier to find solutions that match the particular circumstances of a system. It assumes, however, that each system will be thoroughly assessed according to soundly based and widely applied standards rather than according to what is merely locally achievable or acceptable.

The first principle presented in the Act is that drinking water is considered to be a public health issue and the Ministry of Health Services is the lead agency responsible for drinking water protection. Drinking Water Officers are to have the same powers as other public health officials and the Ministry is to put its full confidence in its new ‘experts’.

¹⁶⁴ Ibid.

By putting health officials in charge of safeguarding water quality, the water supply is evaluated by a knowledgeable expert in human health, who is therefore better able than most to judge whether water meets the criteria of being “safe” and “fit for domestic purposes.”¹⁶⁵

This faith in scientific experts portrays an assumption that people are still willing to grant a monopoly of judging what is safe to others, and that they do not have the means to judge for themselves. Again, the steady rise in home water treatment and bottled water sales demonstrate that this is a false assumption. This unbridled faith in experts also presumes that they are the objective bearers of scientific truth and are not influenced by the human frailty of personal bias. This reliance on experts leads to what Robert Hackett calls the “regime of objectivity” that can actually serve to maintain hegemonic order or monopolies of knowledge.¹⁶⁶

If safe drinking water is a public health issue and public health is a provincial responsibility, can drinking water then be viewed as a public good and is it then the responsibility of the provincial government to supply it? Recent provincial government announcements for water project funding in the hundreds of millions of dollars would seem to indicate this is so. What is not clear is when the citizens of B.C. will feel the full impact of the last of the Act’s eight principles which is based on “user-pay” models, and which Minister Hansen has said “have been recommended in virtually all of the reports on drinking water in this province in recent years. This means suppliers will need to look at rates and users will have to pay more of their fair share.”¹⁶⁷

¹⁶⁵ Ibid.

¹⁶⁶ R. Hackett, and Y. Zhao. *Sustaining Democracy? Journalism and the Politics of Objectivity*. (Toronto: Garamond Press, 1997).

¹⁶⁷ Colin Hansen, Minister of Health Services, “British Columbia’s Action Plan for Safe Drinking Water,” (Excerpt from speaking notes from B.C. Water and Wastewater Association Annual General Meeting, April 28, 2002, Penticton, BC), 4. http://www.healthservices.gov.bc.ca/protect/speech_drinking_water.pdf.

The second principle in the Act is: “Source protection is a critical part of drinking water protection.”¹⁶⁸ The lead agency for drinking water source protection is the Ministry of Water, Land and Air Protection, but it is still under the authority of Drinking Water Officers. While protecting these areas seems to be a given, this principle was criticized for excluding the protection of groundwater. Although groundwater protection regulations have since been created under the provincial Water Act in July 2004, it remains unclear how the mandates of source protection will be carried out.

The Act’s third principle, “an integrated approach”, may pose one of the greatest challenges to an effective water policy. Water is pervasive and several ministries, agencies and user groups are involved or affected, and great faith is put in their abilities to work as a unit.

The Ministry of Health Services – through the Drinking Water Officers employed by our regional Health Authorities – is responsible for the front-line protection, and implementing the province’s drinking water action plan.

The Ministry of Water, Land and Air Protection is responsible for source protection.

The Ministry of Sustainable Resource Management will ensure land-use planning activities address drinking water issues.

The Ministry of Agriculture, Fisheries and Food will oversee environmental farm management to prevent contamination from livestock and range activities.

The Ministry of Forests ... is strengthening the obligation of the forestry industry to maintain water quality.

The Ministry of Community, Aboriginal and Women’s Services is the lead for infrastructure improvements, which involves working with municipalities and regional districts on capital planning, and accessing federal-provincial infrastructure grants.

The Ministry of Health Planning ... will ensure the accountability of government, drinking water officers and suppliers, as well as develop compliance guidelines and tap-water standards.

¹⁶⁸ Ibid.

We anticipate working closely with the B.C. Water and Waste Association on these materials – “regulatory compliance” or “due diligence” documents, as they are sometimes called.

There will also be an inter-ministry committee on drinking water.¹⁶⁹

Communication among these different groups can be hampered by: competing interests and competition for resources, internal and external lobbying pressures, tradeoffs and territorial protection of spheres of influence.

The fourth principle calls for a thorough risk assessment of the drinking water supply of every system in the province “from source to tap”.¹⁷⁰ The problem here is that there are more than 3,300 water systems in B.C., not including the estimated 63,000 individual private wells and domestic licensees.¹⁷¹ It is unclear if an assessment team will test all private wells in addition to the public systems, or if purveyors and owners will be required to comply. Either way, follow-up is essential to ensure the assessment is done in a timely fashion and it will prove to be onerous. Another factor that has not been addressed is how testing is to be done at the tap. Will residents be provided with test kits or will samples be taken at certain junction points only? The risk of contamination at residences is real and can vary depending on the age of the piping in the house, leakages and seepages, and neighbouring users.

The fifth principle is “system integrity” which calls for certification of all water operators and infrastructure improvements. It recognizes the dual needs of meeting health standards and taking into account the economic impact of attaining them. One of the potential downsides of putting much of the onus on the local level is that the more

¹⁶⁹ Ibid.

¹⁷⁰ Ibid., 6

¹⁷¹ BC Ministry of Health Services . *Action plan for safe drinking water in British Columbia*. (Victoria, BC: British Columbia Ministry of Health Services, 2002), 2.
http://www.healthservices.gov.bc.ca/cpa/publications/safe_drinking_printcopy.pdf.

affluent the community, the easier it will be to meet, or, as in the case of West Vancouver, possibly exceed the health standards. Communities that are not so affluent may have to boil or buy their water until they can either fix it themselves or get some outside assistance. Health standards could then be, in effect, minimized, or reduced to the lowest acceptable level.¹⁷²

The deadline for water operators of small systems (those serving 500 people or less) to gain certification has been extended because many had still not received certification and also because at the time the amended *Drinking Water Protection Act* came into force, they did not have the certification training program in place.¹⁷³

The sixth principle, ‘Monitoring’, is most critical with regard to assessing and mitigating the risks to the water supply. The Walkerton crisis highlighted the urgent need for water safety planning to include safeguards and follow-ups to ensure that proper testing and reporting is done by whoever operates a system of any size.

The new legislation, promises to increase testing, monitoring and reporting yet “chemical parameters will not be specified as part of the regulations”. This is intended to allow each system to test for chemicals that are of particular concern. It seems then that these concerns will already have to have been identified before they will test for them. Perhaps it would be more prudent to find out exactly what is in each system and at what

¹⁷² Ibid., 7

¹⁷³ Ron Dufell, “Memorandum to Drinking Water Leadership Council/Drinking water Officers”. British Columbia Ministry of Health Services, December 17, 2004. http://www.healthservices.gov.bc.ca/protect/2764_001.pdf.

level. These would then have to be compared to the governing Maximum Allowable Concentration (MACs) levels – which B.C. has not fully included in its regulations.¹⁷⁴

It is good that the Drinking Water Protection Act requires operators and labs to immediately report threats to the water system to health officials and to the public, but the notification procedures do not specify how officials will be able to verify that all affected people have been notified. Notices are to be published and broadcast where gravity warrants, and signs as well are to be posted with information on the nature of the problem and remedial action to take. While employing whatever modern means of communication are available, what is also needed is a neighbourhood rollout and follow-up plan to ensure that all residents have been made aware of the situation and that all residents have adequate alternatives.

Another issue with the ‘monitoring’ principle, as it is written, stems from the fact that it is focussed on E. Coli and faecal coliform contamination, and is not as rigorous when it comes to water turbidity which can also have negative effects on human health as well as on the effectiveness of treatment.

Annual water quality reports must be submitted to the public, but there are no daily reporting requirements unless a situation occurs. As was mentioned earlier, the GVRD publishes the Water Turbidity Reading from the previous day on its website and the *Vancouver Sun* publishes them on their “Weather Page”. This practice is not however widespread (the *Sun*’s sister paper, the *Province*, does not include this info). Further, the turbidity reading, unlike the E. Coli and faecal coliform testing, is taken daily at the

¹⁷⁴ Colin Hansen, Minister of Health Services, “British Columbia’s Action Plan for Safe Drinking Water,” (Excerpt from speaking notes from B.C. Water and Wastewater Association Annual General Meeting, April 28, 2002, Penticton, BC), 7. http://www.healthservices.gov.bc.ca/protect/speech_drinking_water.pdf.

source treatment sites only, however the quality of the water can change considerably as it travels the miles of pipes from source to tap.

The seventh principle addresses flexibility for small systems. Many systems in B.C. only require minimal treatment and in some cases residents do not want chemical treatment applied to what they drink, fearing ‘the cure could be worse than the disease’ (Chilliwack being an example of the former and Fruitvale an example of the latter.) Flexibility does mean that any treatment regime can be tailored to a particular system’s and community’s needs and wants, as long as certain standards are met, and only if it is affordable and the community approves whatever stream its officials choose to take. Lack of resources for small communities should not be used as an excuse to deny a population the best available solutions.

It is not clear how small systems will fund infrastructure upgrades that may be necessary to meet the new standards without assistance from the higher levels of government. The potentially negative downside of this flexible approach, especially if full cost recovery and user pay principles are rigorously applied, is that it could create a two-tiered type of water service (i.e. the latest and greatest for those who can afford it and boiled water for those who cannot). Comments from the Minister, when introducing the new Drinking Water Protection Act, do not make it any clearer.

Of course one of the biggest challenges for smaller systems will be how to meet the higher standards, without requiring infrastructure investments that are unaffordable to the small populations they serve.¹⁷⁵

The eighth principle declares that: “Safe drinking water should be affordable, with users paying appropriate costs.”¹⁷⁶ It warns that the new regulatory framework will cost

¹⁷⁵ Ibid.

more and that the provincial government will not foot the entire bill. “This means suppliers will need to look at rates, and users will have to pay more of their fair share.”¹⁷⁷

This last principle is key to understanding what the bottom line will be to ensure a safe drinking water supply in British Columbia. You, as the user, will pay more either directly in your water bill or indirectly through taxation. No matter who will pay for the new standards, the federal, provincial or municipal government or the user, in the end it all trickles down to the citizen, for governments run on the taxes collected and again, there is only one ratepayer. The disconnect here, as will be shown later in results from the survey completed for this thesis, is that many ratepayers are not users, they buy their own drinking water from a private supplier.

A glaring omission in the aforementioned eight principles of the Act is an explicit public education plan. There is mention of the plan for better public notification (principle 6 - monitoring) and notification the users will be paying more (principle 8), but there appears to be no concerted effort to educate the public about water quality, threats to it and the supply, nor ways to mitigate these risks through personal awareness and testing capabilities, alternative options, or even ways to reduce consumption. True, several municipalities have some type of ‘water smart’ program, but they are not coordinated, nor are they well publicised. To highlight this, it was only by accident that the author of this paper became aware of the national “Blue Thumb Week”, a.k.a. “Drinking Water Week” – an international program that dedicates the first full week of

¹⁷⁶ Ibid.

¹⁷⁷ Ibid.

each May to drinking water and water use issues¹⁷⁸, and that the decade from 2005 to 2015 has been dedicated by the United Nations to Water.¹⁷⁹ Worth noting is that the link to B.C.'s 'Blue Thumb' program yielded no information on the program.

4.3 Conclusion to Critiques of British Columbia's New Water Legislation Section

While many sections of various articles of B.C. legislation, that affect the water supplied by the public system, appear to be moving in a positive direction (e.g. the mandate to provide potable water, source protection and demand side management), what is glaringly absent is a roll-out plan and timetable for correcting deficiencies. Moreover, many of the issues raised in this thesis either have not been addressed or have been quietly set aside. Among them are: How will the publicly funded and operated water delivery system be maintained?; Are there adequate resources to ensure the roll-out, monitoring and enforcement of the new Drinking Water Protection Act?; Is there, and to what degree, a role for the private sector in the public delivery of drinking water or will the private sector be relegated to the consumer market only?; Is there a market for bottled tap water?; Why is all water being treated to a potable state when drinking only accounts for a fraction (10-15%) of domestic water use and sanitation (e.g. flushing the toilet) accounts for the most?; and finally, has the general public lost faith in the post-Walkerton public water supply as the rise in bottled water sales would seem to indicate, and if so, what is being done to regain this trust, or why treat it if few are drinking it?

¹⁷⁸ Health Canada. "'Blue Thumb', Water Quality and Health'. Last updated 2003-07-28. http://www.hc-sc.gc.ca/hecs-sesc/water/blue_thumb.htm.

¹⁷⁹ Urban Water Resources Management. "*UN DECLARES INTERNATIONAL WATER DECADE "Water for Life"*". Urban Water Resources Management. http://www.gdrc.org/uem/water/decade_05-15/.

The next chapter presents results of “the B.C. Resident Survey on Attitudes and Perceptions towards drinking water” which was an attempt to address some of these issues and to provide policy makers with an accurate reflection of what the public perceptions and habits are in using the most basic and needed resource, water.

CHAPTER 5

CASE STUDY: THE SFU SURVEY OF ATTITUDES AND PERCEPTIONS TOWARDS DRINKING WATER

“...look at Evian water and the amount of money you're paying.
If you spell Evian backwards, you are naive.”
(Mike Price, Manager of Toronto's Water and Wastewater)¹⁸⁰

The importance of representative samples or surveys is twofold, as noted in *Improving Risk Communication*. First it allows policy makers to have hard data on public perceptions and attitudes, and second, they convey a certain level of openness for the decision making process.¹⁸¹ When the general public believes that efforts have been made to get a true picture of what is happening ‘on the ground’ *before* conclusions are drawn or policies are set, the legitimacy of the process and those involved in it are enhanced.

A Survey on B.C. Resident's Attitudes and Perceptions towards Drinking Water, conducted in 2003, is believed to be one of the first attempts to get an accurate picture of how people feel about tap water and alternatives to it, such as bottled water and home filtration. It also attempted to reveal how much trust people have in the water supply in a post-Walkerton environment, where the public is now more aware that things can and have gone tragically wrong with one of the most basic provisions of an organized society.

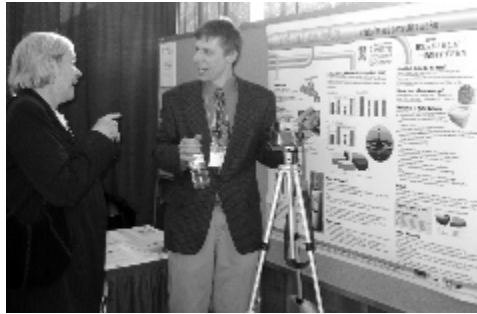
¹⁸⁰ David Nickle. “Council asked to pay \$50,000 to tell us our tap water is safe” *InsideToronto.com*, February 6, 2004. <http://www.insidetoronto.ca/to/york/story/1665227p-1959923c.html>.

¹⁸¹ Committee on Risk Perception and Communication, Commission on Behavioural and Social Sciences and Education, Commission on Physical Sciences, Mathematics and Resources, National Research Council. *Improving Risk Communication*. (Washington, D.C: National Academy Press, 1989), 154.

5.1 Survey Background

The water use survey discussed in this chapter had its genesis at the University of Calgary in Spring 2003. It was then combined with a survey of users of the Delta, B.C. Watershed and conducted in Vancouver and the Lower Mainland in Fall 2003. A poster display of the research was presented at the Applied Science Institute's annual ASI exchange in March 2004, and in April 2004, a reworked version of the Water Policy Poster was presented to the Canadian Science Writer's Annual Conference held in Toronto.¹⁸²

Figure 1 Paul Krueger Discussing the Water Policy Poster v.1 with ASI attendee. March 9, 2004.



5.2 Survey Methodology

Not only is the truth of a given idea measured by the degree and celerity wherewith it goes into action, but a very distinct component of truth remains ungrasped by the non-participant in the action.¹⁸³

The survey on BC Residents was derived from the Calgary bottled water survey (see 7.2 Appendix B) and was fashioned to elicit responses that would convey something about respondents' attitudes and perceptions of drinking water in general in addition to what they felt about bottled water.

¹⁸² See figure 1 below and appendix 7.5.

¹⁸³ Ezra Pound. *Guide to Kulchur*. (New York: New directions Books, 1937), 182.

While trying to be as in depth and as broad as possible, all efforts were made to keep the questionnaire to one page that could be answered within three to five minutes. (See Appendix B).

In an effort to maximize the number of survey responses and to minimize and diffuse the entry of data, it was decided to incorporate the data gathering as part of an undergrad communication research methods course (CMNS 363 – Fall 2003). As part of the Ethical Approval, only the data of those students that gave permission for its use was included. This, combined with the exclusion of all surveys from non-BC residents, reduced our sample size from over 1300 to 837.

The students were paired and were instructed to gather fifteen completed surveys each. One made observations and field notes while the other conducted surveys. Each student entered completed survey data onto a preformatted Microsoft Excel worksheet. The data was then transferred to a master spreadsheet, which was then copied and cleaned. All original surveys and electronic data worksheets have been preserved.

The next term, the project was incorporated into a directed studies course for two upper division undergrad students.¹⁸⁴ The goal for this stage of the project was to produce some of the initial survey findings and to cross tabulate some of the results and to attempt to draw out any apparent trends, confirmations or contradictions of the hypothesis and any apparent ‘disconnections’ occurring in the responses. These findings were then to be incorporated into a poster board display and presented at the Applied Science Institute’s Annual “Exchange” expo.

¹⁸⁴ Steven Reddy and Wesla Wong.

Throughout this thesis, the application of theory in action was employed by working with two key concepts: *Communication* and *Applied Science*. All facets of this thesis have had elements of one or the other or both. The design and execution of the survey, the Water Poster, written abstracts, the poster presentations and its web-cast, the water taste test, letters to the editor and even the McLuhan-esque tetrads on policy options, are all examples of science applied with a focus on either quantitative or qualitative methods, or were efforts to communicate the research being done.

5.3 Results of the B.C. Residents' Survey of Attitudes and Perceptions Towards Drinking Water

The following section details the answers to the survey questions and observations of the 837 surveys of B.C. residents and which survey is included in this report.¹⁸⁵

5.3.1 Observations of Respondents by Survey Takers

The surveys were conducted in most of the areas served by the GVRD water system, but the majority were conducted in the City of Vancouver. (see table 5 in appendix C) Once begun, no surveys included in this sample were stopped nor did any refuse to answer any of the questions.

Fifty-two percent of respondents were female and forty-eight percent were male. Fifty-six percent of respondents appeared to be of European ancestry, twenty-five percent Sino, eight from other ancestry, seven from the Indian Subcontinent, two percent of African ancestry, one of First Nations, and one percent unknown.

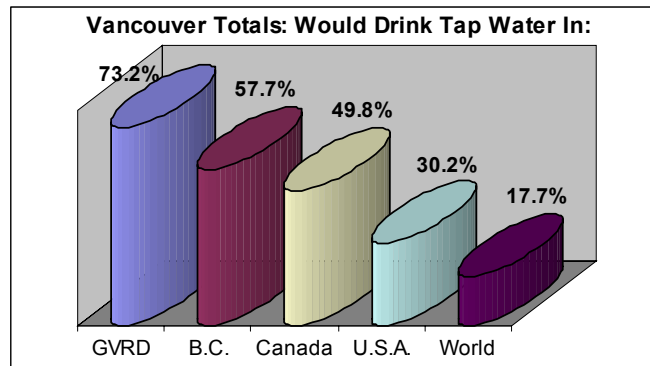
¹⁸⁵ These results can also be found in tabular form in 7.3 Appendix C.

Thirty-four percent of respondents appeared to be between 18 and 25 years of age, twenty-five percent appeared to be between 26 and 35, eighteen percent appeared to be between 36 and 45, eleven percent appeared to be between 46 and 55, five percent appeared to be between 56 and 65, four percent appeared over 65 and two percent had no observation noted.

5.3.2 Survey Responses

Most respondents (thirty-nine percent) said they originated from the Lower Mainland, twelve percent indicated they were from elsewhere in B.C., nineteen percent were from elsewhere in Canada, and one percent were from the United States. The second largest group (twenty-one percent) originated from outside Canada or the continental United States and eight percent had no response to this question.

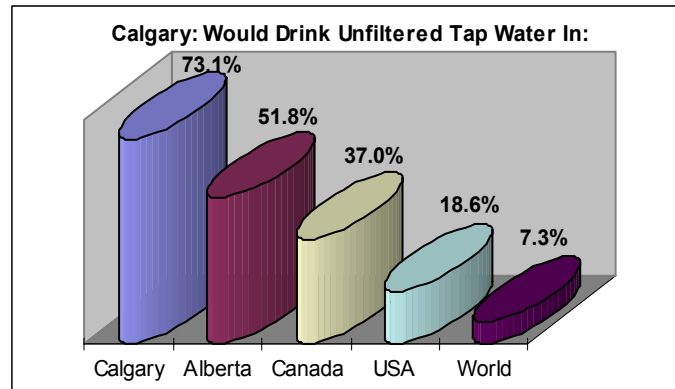
Figure 2 How Many Would Drink Tap Water.



The responses to the question 3, “Would you drink unfiltered tap water? (see Figure 2), reveal a high confidence in the GVRD system and, not surprisingly, a diminished confidence in the quality and or safety of water the further one gets from their places of residence. When compared to the University of Calgary Water Survey, the

figures correlate with this distinctive trend, though, as seen below, the rate of decreased confidence is even more pronounced in the Calgary sample of 521 respondents.

Figure 3 Calgary Water Survey Results.



The results from this question correlate on the micro level with the findings that the further one lived from a local water supply or watershed, the less trust one had in the water system. Those living in West Vancouver and North Vancouver had a higher trust rate than those in the Vancouver-Burnaby-Richmond and New West areas, and those furthest away from their source (e.g. Delta and Surrey) had the least trust in the public system.

One of the major inconsistencies or ‘disconnects’ revealed in this survey was that although almost three quarters of the respondents would drink GVRD tap water, the responses to questions 4a (Do you have a filter system or other water treatment at home?) and 4b (Do you buy large bottles of water (e.g. At the market or delivered?)) show that fifty-seven percent of respondents have a filter system or other treatment system at home and thirty-four and one-half percent buy the large cooler type bottles for home, and some do both. Further, according to question 5 (Do you buy bottled water regularly (more than once a month?)) and attesting to the size of the market, sixty-one percent buy bottled

water more than once a month. The question that arises here is: If large portions of the population say they would drink unfiltered tap water, why don't they? Why do so many have a filter system at home or buy bottled water rather than drink it right from the tap?

Why so many that say they would drink tap water yet have a filter system is obscure, and the main reason why people buy bottle water was not explained. While, as expected, in question 6 (If yes to Q.5, why?) large numbers said they buy bottled water because of taste, perceived purity and safety, the main reason they do so is for convenience. Respondents could select all reasons that applied to them. Taste was chosen as the reason for buying bottled water in forty-three percent of responses, purity in forty-eight percent, safety in forty-six percent and convenience was selected in sixty-five percent of the replies. Brand image only factored in five percent of the responses, and six percent gave other reasons, such as a free supply. Thirty-seven percent had no reply, which correlates to the number that does not buy bottled water regularly.

The juxtaposition of how people feel about their municipal water system and why they buy bottled water indicates that they might buy tap water if it came out of a bottle, as long as they were confident in its quality and safety.

The notion of bottling and selling public water will not be explored in more detail here, but it will be said that the responses to question 7 (Do you have a preferred brand?) indicate that most people who buy bottled water do not have a brand preference. Only twenty-five percent indicated a bottled water brand preference, forty-three percent had none and the question was not applicable in thirty-two percent of responses. Reiterating that most would drink GVRD tap water, under what conditions would they be receptive to 'GVRD *bottled* tap waterTM'?

The inclusion of question 8 (Other than water delivered to your home by the GVRD do you use any alternative water sources (i.e. Public fountains, springs or a well)? was an attempt to find out how many use alternative sources of drinking water and what lengths they had to go to get it. 'Alternative' supply was meant to refer to water coming from a well, spring or artesian well or something other than water that is supplied by the public municipal system. There was some confusion with what was meant by 'alternative' and some took this to include public drinking fountains that are supplied by the municipal system as found in a school or other public facility. Only sixteen percent of respondents use some type of alternative water supply. Many survey takers reported in class that many people did not know why this question was included and did not understand from where, other than the tap or the store, water could come. This underscores that most people rely on the municipal supply, and it is likely that many take it for granted that when they turn on the tap potable water simply appears. From personal experience, it is known that many of those who use alternative water supplies by choice, do so because they believe it is better than what is supplied by the municipal system.

Question 9 (If Yes to Q.8 why?) asks why people use the alternative water source. Taste, purity, safety and economic reasons all factored equally but the largest reason was due to other unknown factors. When those who used an alternative water supply were asked in question 10a (If yes to Q.8, do you pay for the alternative water source?) and 10b (Would you pay for it?), the overwhelming majority (eighty-three percent) of those who used the alternative source indicated that they did not and would not pay for the alternative water supply.

Questions 11 (Do you trust tap water?) and 13 (Do you like the taste of your tap water?) were put in the survey as check questions to see if the answers to these corresponded to the answers of the other questions. For instance, if one were inclined to trust tap water (which sixty percent do) you would think that they would drink it (which seventy-two percent indicated they would). If they trusted it and would drink it, one would also think that they liked the taste of it, but fifty-one percent said that they did not. The ‘disconnect’ is readily apparent. Only sixty percent trust tap water, yet seventy-three percent would drink the GVRD’s, but only forty-eight percent like the taste of what they are drinking. Also, as was shown previously, fifty-seven percent have a home filtration system, almost thirty-five percent buy the large bottles of water and sixty percent buy small bottles of water more than twice a month.

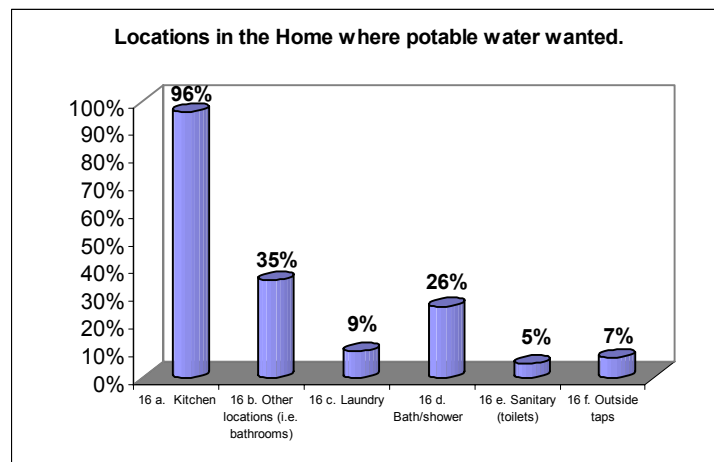
The ‘disconnects’ cited above provide what can best be described as a murky view of habits and attitudes towards the public drinking water system. When asked in question 12 “Do you know the source of your tap water?” fifty-four percent, more than half, did not know the source beyond the tap. What is clear from this confusion is that most people have no idea what they are drinking, where it comes from or how safe it is. This indicates that people place a high degree of trust in those who provide them with their drinking water, no matter if the source is the public system or a private vendor of bottled water.

The question of home ownership, question 14 (Do you own or rent your home?) was included in an attempt to understand if this mattered when it came to attitudes and perceptions of drinking water. The survey respondents were an almost equal mix with forty-eight percent being owners and fifty-one percent renters, one percent did not

answer. With question 15 (If you own your home, how hard would it be to refit it with a separate drinking water line to all points of use (i.e. kitchen, bathrooms)?), only eleven percent indicated that it could be easily done, twelve percent thought it would be somewhat difficult, while eighteen percent presumed it would be very difficult and an equal number did not know; forty-eight percent gave no answer.

The last question, 16 (If you had two sources of water for your home, one for drinking and the other non-potable (for laundry, toilets, etc.) what areas would you have the drinking water piped to in your home?) was designed to gauge attitudes on dual-line supply systems where one is potable water and the other ‘service’ grade water.

Figure 4 Where Potable Water is Wanted in the Home.



Perhaps the largest disconnect comes to the fore in the responses to this last question. Currently, the common practice is to treat all the water that comes to your house to a potable standard. This is done, presumably, for public health reasons, so no matter from where water has originated in the home when consumed, it is potable, including if a person or pet were to lap it from the toilet (a good source of water in an emergency situation). Almost all respondents thought the kitchen tap should be potable

but less than five percent want potable water in the toilet. How many realize that this is precisely where thirty percent of our drinking water goes?¹⁸⁶

5.4 Cross Tabulations

The results from the survey questions reveal a significant difference between our practices of providing and managing our water supply and our water use habits. To get a more detailed view, one must compare these responses against each other. This section on cross tabulations will attempt to show that the pattern emerging is that those in control do not know or care to consider if their water policies correspond to how residents are using water (or not), and that the consumers of water either do not know, or do not believe, what their tap water quality is, and do not know or care how it is managed.

Recall over all, that 60.45% stated they trust tap water, but sixty-one percent buy bottled water regularly more than once a month and 70.5% have a home filtration system or buy the large cooler-type bottles of drinking water (twenty-one percent do both). Of the group that trust tap water, fifty-four percent buy bottled water but twenty-eight percent, who do not trust tap water, do not buy bottled water. Sixty-three percent of those that stated they trust tap water use home water treatment or buy the large cooler water bottles. Conversely, eighteen percent of those who stated they do not trust tap water, do not have home filtration or other water treatment, nor do they buy the large cooler bottles, and seven percent of them must drink tap water despite their lack of trust, or drink no water at all, for they do not filter nor buy large or small bottled water.

¹⁸⁶ Toilets – 30% Clothes Washers – 20% Faucets – 14% Showers – 14% Leaks – 10% Baths – 6% Dishwashers – 2% Other – 1% (<http://www.gvrd.bc.ca/water/residential-conservation-initiatives.htm>)

The question is: why do people buy bottled water or filter tap water if they trust it? Sixty-five percent cited convenience as a reason why they bought bottled water but, as it was not asked, no reason can be given as to why they filter or use large bottles for home.

The following charts and tables will show if there is a relation between gender and: trust in tap water, the regular purchase of bottled water, or use of home filtration and/or the large ‘cooler type’ bottles of water. These cross tabulations will also be done with age, place of residency, and place of origin to any show trends within these categories.

Figure 5 Gender and Percentage That Trust Tap Water

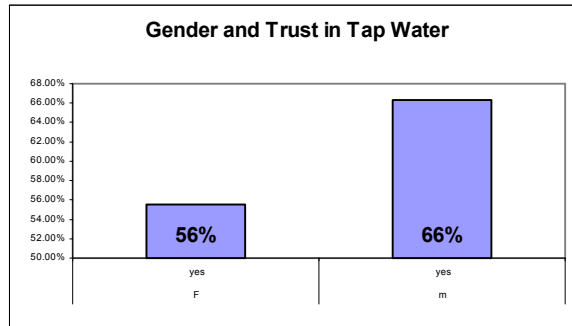


Figure 5 shows a higher percentage of men trust tap water than women, correspondingly, a larger percentage of women purchase bottled water regularly and use a home filtration and/or large ‘cooler’ bottles, as seen in Figures 6 and 7. Compared to the whole sample, men trust tap water six percent more and women trust tap water four percent less.

Figure 6 Gender and Regular Purchase of Bottled Water.

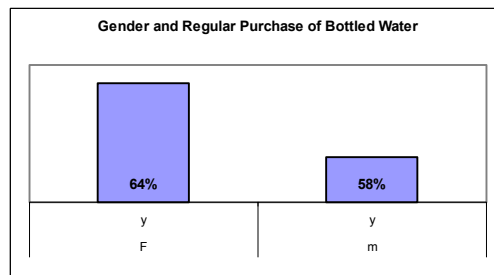


Figure 6 shows the percentage of women who buy bottled water is slightly higher and slightly lower for men when compared to the sixty-one percent overall. The numbers that have home water treatment or buy the large bottles follow a similar trend, five percent more of women than the overall number, and five percent less of men.

Figure 7 Gender and Use of Large Cooler Bottles (4b) and/or Home Filtration (4a).

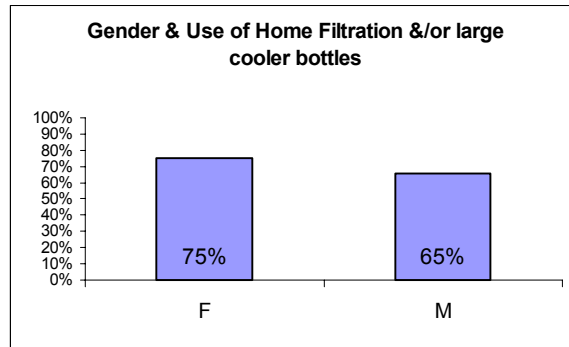
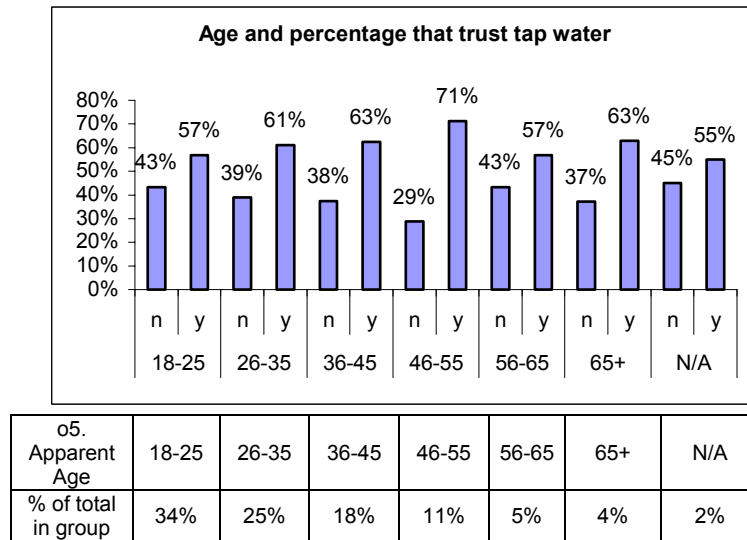
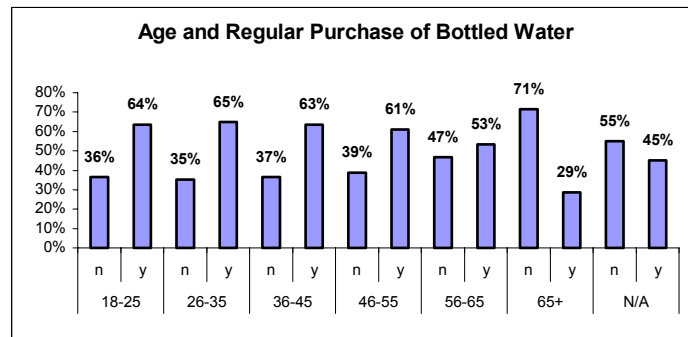


Figure 8 Age and Percentage That Trust Tap Water



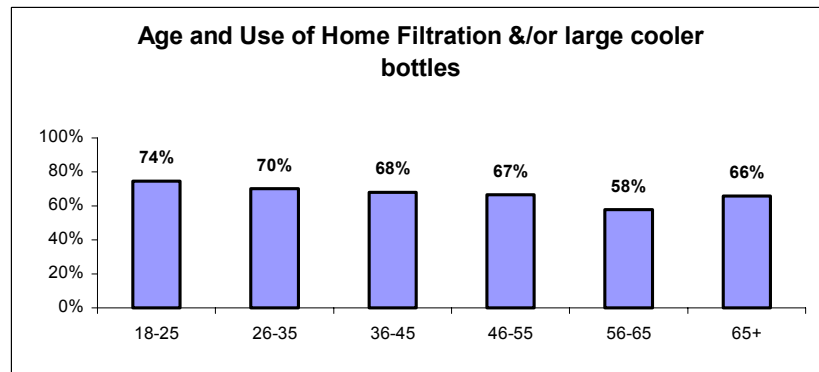
The emerging trend when considering age as a factor in trust of tap water is that the level of trust rises with the age up to 45-55, but then declines. All age groups (other than those 46-55) were within five percent (more or less) than the sample overall.

Figure 9 Age and Regular Purchase of Bottled Water.



Again, as Figures 9 and 10 demonstrate, even though the numbers are not too far from the overall sample, it appears that the older the respondent, the less they purchase bottled water – whether big or small bottles, or use home water treatment devices.

Figure 10 Age and Use of Home Filtration &/or Large Cooler Bottles



Most cities trust tap water as much as the overall average but there is a clear trend suggesting the closer one is located to their drinking source, the higher the level of trust.

Table 1 Place of Residency and Trust of Public Tap Water.

City	% that trust tap water	% of total sample	City	% that trust tap water	% of total sample
Abbotsford	90.0%	1.2%	Maple Ridge	63.2%	2.3%
Brookswood	100.0%	0.1%	New Westminster	57.1%	5.0%
Burnaby	59.0%	12.5%	North Vancouver	74.2%	3.7%
Chilliwack	100.0%	0.2%	Parksville	100.0%	0.1%
Cloverdale	100.0%	0.1%	Penticton	100.0%	0.1%
Coquitlam	50.5%	11.1%	Pitt Meadows	100.0%	0.4%
Cranbrook	0%	0.1%	Port Coquitlam	76.0%	3.0%
Dawson Creek	100.0%	0.1%	Port Moody	81.3%	1.9%
Delta	40.0%	1.8%	Richmond	47.8%	8.2%
Fort Langley	100.0%	0.1%	Surrey	64.6%	5.7%
Harrison Hot Springs	100.0%	0.1%	Vancouver	60.3%	37.9%
Hope	100.0%	0.1%	Victoria	50.0%	0.5%
Kelowna	0%	0.1%	West Vancouver	87.5%	1.0%
Langley	68.8%	1.9%	White Rock	75.0%	0.5%

Table 2 Place of Residency and Regular Purchase of Bottled Water.

City	% that purchase bottled water regularly	City	% that purchase bottled water regularly
Abbotsford	60.0%	Maple Ridge	78.9%
Brookswood	100.0%	New Westminster	52.4%
Burnaby	60.0%	North Vancouver	64.5%
Chilliwack	100.0%	Parksville	0%
Cloverdale	100.0%	Penticton	100.0%
Coquitlam	63.0%	Pitt Meadows	66.7%
Cranbrook	0%	Port Coquitlam	84.0%
Dawson Creek	100.0%	Port Moody	62.5%
Delta	73.3%	Richmond	60.9%
Fort Langley	100.0%	Surrey	56.3%
Harrison Hot Springs	100.0%	Vancouver	59.0%
Hope	100.0%	Victoria	75.0%
Kelowna	0%	West Vancouver	25.0%
Langley	62.5%	White Rock	75.0%

With the exception of those communities marked in bold type, the ratio of those that regularly buy large or small bottled water or use home water treatment devices, to those that don't, is comparable to the ratio overall and the ratio among age groups. The sample sizes from each community could have had an effect on these ratios.

Table 3 Place of Residency and Use of Large Cooler Bottles (4b) and/or Home Filtration (4a).

City	% of City	City	% of City
Abbotsford	70%	Maple Ridge	79%
Brookwood	100%	New Westminster	69%
Burnaby	71%	North Vancouver	81%
Chilliwack	0%	Parksville	100%
Cloverdale	100%	Penticton	0%
Coquitlam	72%	Pitt Meadows	100%
Cranbrook	0%	Port Coquitlam	72%
Dawson Creek	100%	Port Moody	88%
Delta	53%	Richmond	70%
Fort Langley	0%	Surrey	69%
Harrison Hot Springs	100%	Vancouver	69%
Hope	0%	Victoria	75%
Kelowna	100%	West Vancouver	50%
Langley	75%	White Rock	100%
Maple Ridge	79%	GVRD Overall	70%

Figure 11 shows that those respondents originating from overseas and the United States have a significantly lower level of trust in tap water than the sample overall. Alternatively, place of origin does not seem to be a factor in whether or not one buys bottled water (Fig. 12). It must be noted that the small number of respondents from the U.S. could have skewed the U.S. results.

Figure 11 Place of Origin and Trust of Public Water.

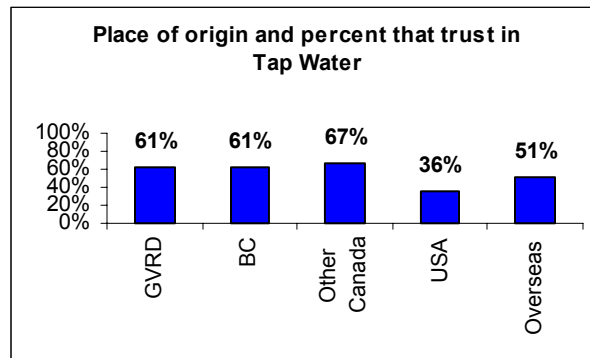


Figure 12 Place of Origin and Regular Purchase of Bottled Water.

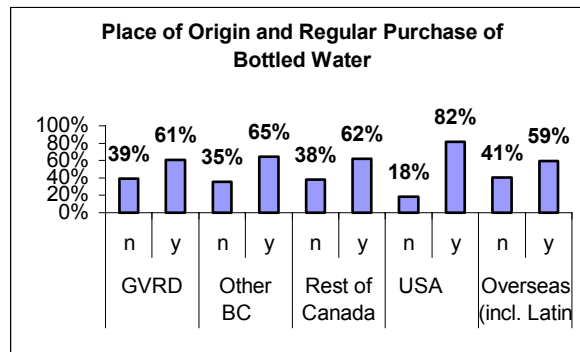
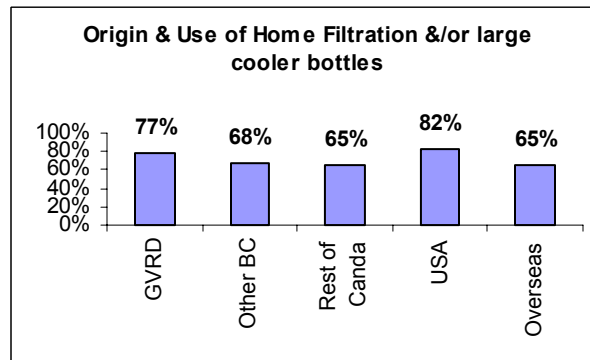


Figure 13 Place of Origin & Use of Home Filtration &/or Large Cooler Bottles



Oddly, those (other than those from the U.S.) from the GVRD respondents are most likely to have home water treatment devices or buy the large bottles as seen in Table 13. The number in this group is seven percent over the seventy percent for the whole. Those that came from other areas were less likely to have home water treatment than the survey sample average.

The emerging trends revealed above are: there are differences in the perception of tap water and uses of bottled water or treated water between gender and among different age groups. The community one lives in may have a bearing on these same perceptions and habits, and the only trend that was gleaned from analysing where someone originated from is that those from the Lower Mainland are *most* likely to use home water treatment

devices. None of the cross tabulations showed any dramatic differences when compared to the overall sample.

Is it a simple lack of trust or is it a lack of awareness? Based on the survey, it would appear that it is simply a breakdown in communication. The public is biased against the public system as was revealed in a taste test (appendix E), where the majority of respondents liked Vancouver tap water best, over filtered or spring water, unless they thought it was tap water! The public system is blind to this and seemingly intent on maintaining and even expanding the status quo. The ever increasing sales of bottled water and water filtration equipment give testament to the fact that more are turning to private purveyors of water, yet projects like the recently announced \$600 million Filtration Project of the GVRD indicate that the managers of our public supply are unaware of this, or bound by policy or law to maintain the status quo.

CHAPTER 6

CONCLUSION AND AREAS OF FUTURE RESEARCH

6.1 Conclusion

6.1.1 Apathetic Somnambulism

Water and communication are related as body is to soul. The world and everything in it – including all people – are comprised of, or dependent on, water. We, as stewards of the earth, are dependent on communication to care effectively for what sustains us, just as the body must care for the spirit that animates it. The B.C. Residents' Survey on Attitudes and Perceptions Towards Drinking Water reveals that many are in what Marshal McLuhan called a state of 'somnambulism', meaning they are sleepwalking and unaware of their actual environment until they are out of it.¹⁸⁷

It is because most people are so far removed from direct control and responsibility over drinking water that they are unaware and don't care how it works until it doesn't. In this anti-environment the water is just there, but it is technologically mediated, and the way it is mediated shapes how it is perceived. People, in general, are so conditioned to simply turning on a tap and getting as much water as is wanted for almost no cost; its true value is degraded. A fish does not know it is in water until it is out of it.¹⁸⁸ Our world mirrors Bacon's *New Atlantis* and is mystified with the provision of basic needs, or like

¹⁸⁷ Marshall McLuhan, Fiore, and Angel. *War and Peace In The Global Village*. (Corte Madera, CA, USA: Ginko Press, 1997), 71.

¹⁸⁸ Eric Norden. "Marshall McLuhan – A Candid Conversation with the High Priest of Popcult and metaphysician of Media." in *Essential McLuhan*, edited by Eric McLuhan and Frank Zingrone. (Concord, ON: House of Anansi Press Limited, 1995), 233-270.

the aboriginals in the film, *The Gods Must Be Crazy*, is awed by the coke bottle that dropped from the sky.

“... any controlled environment, any man-made environment, is a conditioner that creates non-perceptive somnambulists.”¹⁸⁹

In order to be awakened from this somnambulistic state, ‘the public’ must not only be given more control over their drinking water and related policies and technologies, they must be given more direct responsibility over it as well. Any ‘right’ must be accompanied by a corresponding duty of care and without direct, active and personal involvement, this right is unfounded and rings hollow.

Is there anyone in Canada who cares? In Canada, it would seem that as long as there are relatively affluent conditions, tolerance for monopolies, domination and exposure to risk is relatively high. Despite wide accessibility to the electoral process and ever-increasing alternatives to the dominant media, there is declining voter turnout, less choice at the polls and a growing apathy among the population. Perhaps having been spoon-fed for so long people would rather “keep the devil they know”, than risk rocking the boat.

Most authors discussed here claim that increased democratisation of the various social processes will increase public participation and unity, and will lessen the general apathy and malaise. Why is it then that the converse seems to be true, and what is found is more apathy and a society that seems to be at polar extremes in all facets of life? When so much of everyday life seems farcical, as in the televised question periods of the House of Commons, the public will turn its attention to more ‘serious’ measures -

¹⁸⁹ Marshall McLuhan, Fiore, and Angel. *War and Peace In The Global Village*. (Corte Madera, CA, USA: Ginko Press, 1997), 71.

entertainment and recreation. The current age seems to be one of ever-increasing extremes. Politics have been reduced to positions of 'right', 'left' and 'centre' without any consideration to what aspects of life a position is being referred. Running parallel to this is a rise in interest in mass sports attractions, devised to be distractions, and in particular, a rise in participation and interest in the extreme sports that include combinations of biking, acrobatics and downhill skiing.

It would seem that the collective social conscience has been misplaced and has replaced a desire to effect positive social change for the common good with a desire for more entertainment and cheap consumer goods. "Live fast, die strong."¹⁹⁰

The drivers of: monopolies of knowledge (achieved by control of media of communication and cultural production); the domination of nature (via innovations in science and technical applications) and the mitigation of risk to one's own interests (through management of the message) stem from an inordinate focus on the 'self' over the 'other' that is encountered in daily life. The monopoly situation feeds the apathy, and the apathy feeds the monopoly, as it lowers the threshold for those that *do* want to be involved in order to advance their position or a particular agenda. Apathy is really an extreme form of self-indulgence that says to everyone else, "I don't care."

The lasting effect of the story of William Lyon Mackenzie and the failed rebellion of 1837 is that:

It appears to have left the country without a strong radical tradition. It seems possible, a century later that the lack of a successful revolution has some connection with the unimaginative and sober caution in which Canadian politics have been becalmed during much of the twentieth

¹⁹⁰ King Khan. "Live Fast, Die Strong", *Three Hairs And You're Mine* (Voodoo Rhythm Records, 2001, VR12 08/VRCD 08)

century. The political issues of 1837 - real ones despite their denouement – have been exchanged for a permanent gloat over the gross national product. The old passions have given way to a compulsive self-congratulation on the achievement of a nationhood of whose existence there is still some cause for doubt.¹⁹¹

Where are the sites of popular resistance to domination and monopolies in Canada? The last time British Columbians joined en masse across all strata of society was when Rogers Cable tried to implement negative option billing, where one had to opt out or be charged for services they may not want. Negative option billing has become a hallmark of our present day government in Canada, where citizens routinely pay for programs that do not serve the general good but rather, special interests or favoured segments of the population.

To the extent that we allow the government to take our property, to the same extent it will naturally expand. It has asked, and we have given. This is not a mark of communitarian spirit but of individual cowardice in the face of State aggression, the lack of any will to resist. To the extent that the State expands, individual freedom and responsibility shrink.¹⁹²

Perhaps though, this broad criticism is unfair and the general malaise and apathy that seem to be prevalent among the general population are the manifestations of the frustration that many people feel when looking for alternatives to the monopolies of knowledge and power in our body politic. According to William Gairdner, quoted above and author of *The Trouble With Canada*:

... there is a silent majority of Canadians who are deeply upset by the present trend and who feel that their values and wishes are not being defended by any of the political parties or promoted by the so-called opinion-makers in our society. Neither do they see any reflection of their values in the media, the government, or the special-interest groups they

¹⁹¹ William Kilbourn. *The Firebrand: William Lyon Mackenzie and the Rebellion in Upper Canada*. (Toronto: Clarke, Irwin & Company Limited, 1956), xi – xii.

¹⁹² William D. Gairdner. *The Trouble With Canada*. (Toronto: Stoddart Publishing Co. Limited, 1990), 159.

are forced to support through their tax dollars. These people are not going to march in the street every time they see something they don't like. Neither have they the time to become experts in the field of political economy. But they know what they think and feel. And my experience tells me they're fed up, they're cynical, and worst of all, they're totally distrustful of the political process – a dangerous climate for any democracy, because it leads to an “elite vs. the people” style of government – and the end of real democracy. They can't do anything about this situation short of giving up their livelihoods and entering a political game for which they have lost all respect. So from a sense of futility, they do nothing.¹⁹³

What has linked the main thinkers and authors used in this thesis are the ideas and truths which can do much to address this apathetic condition: the democratisation of the acquisition and dissemination of knowledge, the opening of the process of legislative and policy formation to wider participation, the need for an educated and informed population and the search for social transcendence.

6.1.2 Effective, Equitable and Efficient Policy Formation, Governance and Communication of Risk.

Water is, as communication, on the surface, a simple substance. Yet, when examined more closely, a more complex set of relations is revealed. Water creates and water destroys. Not enough or too much will kill you. Communication can be mediated simply, as in a face-to-face conversation, or in a more complex manner of protocols and electronic technologies. To be effective, policies governing water must be communicated in a manner that best suits the circumstances. The more a message is mediated through technology its potential for dissemination increases. However, at the same time, it becomes more remote to the target audience.

¹⁹³ Ibid., 4.

When flying, observe how many passengers pay attention to the pre-take off emergency instructions. Next, pay attention when the flight attendant speaks directly to those seated next to the emergency exits and see if you detect a difference. In the first instance, the message is mediated from one to many and has become so routine and mundane that its effectiveness is questionable. In the second instance, the message is communicated directly from one to one and because it is direct and personal, it is received more clearly.

A multi-barrier approach to drinking water safety is well advised, but it must correspond with a multi-level communication plan that does not rely only on broadly diffused media of communication. It requires outreach programs designed to measure the effectiveness of whatever means of communication are employed by policy makers.

It should be realized at the outset, that because the perception of any given risk will vary, good policy formation and risk communication practices will not eliminate all controversy surrounding the risk, but they will allow them to be addressed. The credibility gap of government agencies that appear to exist today can only be filled by breaking down the tendency of these agencies to establish and maintain a monopoly of knowledge and control by opening up the process to wider participation.¹⁹⁴

... risk communication should be understood to be a two-way interchange between source organizations and those, including the public and its representatives, who are the intended recipients of risk messages.¹⁹⁵

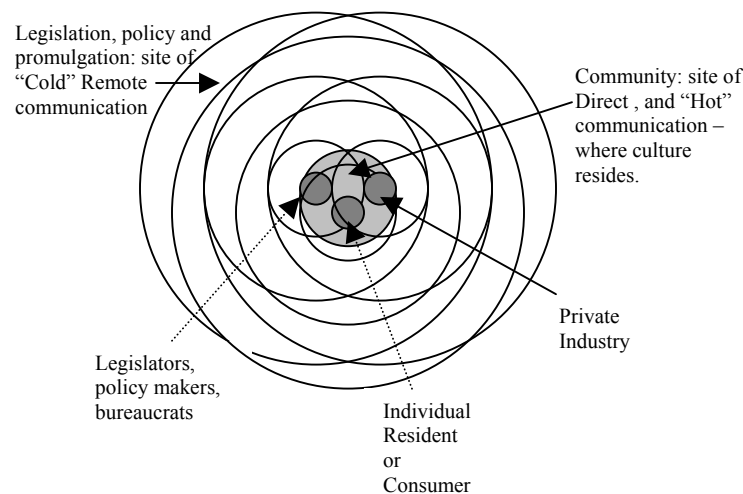
Leiss speaks of the difference between the symmetrical and asymmetrical models of Public Relations and Risk Communication. The symmetrical model is one of openness,

¹⁹⁴ Committee on Risk Perception and Communication, Commission on Behavioural and Social Sciences and Education, Commission on Physical Sciences, Mathematics and Resources, National Research Council. *Improving Risk Communication*. (Washington, D.C: National Academy Press, 1989), 148-149.

¹⁹⁵ *Ibid.*, 176.

meaningful exchange and participation, and multi-level decision-making. The asymmetrical model, on the other hand, favours top-down administration, token participation, pre-ordained outcomes and closed power sharing.¹⁹⁶ The flow of communication from policy and lawmakers to citizens and back again should resemble raindrops hitting a body of water. As each raindrop hits, it ripples out and interconnects with other rippling drops, forming a web of bi-directional interaction and communication that range from direct personal contact to impersonal junk mail or popup ads.

Figure 14 Ripple of Communication.



The centre represents the individual actors that must interact in policy formation, its communication and implementation. The circles that ripple out from the centre represent the degree to which the mode of communication is removed from direct, face to face transmission, be it through the means of print, radio, television, telecommunications, or web-based modes of communication.

¹⁹⁶ Lori L. Walker, *Risk Communication in Theory, Strategy, and Practice: An Examination of Competing Discourses and Interests in Community Advisory Panels*. (Burnaby: Lori Walker, Simon Fraser University, 1997).

Recalling the discussion on apathy above, it must be noted that along with the right to communicate and the ability to participate in the decision making process comes the attending obligation to listen, as well as to be heard, and to be actively engaged when public participation is called for or warranted by the situation. “If risk communication is a two-way enterprise, both sides have rights and responsibilities that must be understood if the process is to work well.”¹⁹⁷ The technical means of communication will vary, but the paramount precondition for wide and meaningful participation is a culture of openness and transparency with actual power sharing in the decision making process. In this way all parties can share ownership of both the problem and the solution.¹⁹⁸

A central premise of democratic government – the existence of an informed electorate – implies a free flow of information. Suppression of relevant information is not only wrong but it is usually, over the long term, also ineffective.¹⁹⁹

The best ways for any organization to lose trust and credibility are to practice anyone or all of the following “Ten Ways to Avoid Communicating About Risk.”

1. Talk instead of acting – Rather than managing the risk, talk around it in hopes that people won’t notice.
2. Trivialize the risk – Compare the risk to rolls of toilet paper or peanut butter to let people know you really care.
3. Hide behind lawyers – They can help you find reasons not to talk.
4. If you make a mistake, deny it – Never let people know you learned from your mistakes.
5. Don’t speak plain English – Use “techno-babble” and bury key points in mounds of detail; or simplify so completely that you leave out important information.

¹⁹⁷ Committee on Risk Perception and Communication, Commission on Behavioural and Social Sciences and Education, Commission on Physical Sciences, Mathematics and Resources, National Research Council. *Improving Risk Communication*. (Washington, D.C: National Academy Press, 1989), 176.

¹⁹⁸ *Ibid.*, 145.

¹⁹⁹ *Ibid.*, 149.

6. Lecture – Make people wait to have their questions answered until you have given them the “important” information.
7. Don’t let down your guard – Never let people see you are human. When people are upset, tell them they are “irrational”.
8. Wait to talk until someone else does – Then act defensive, Blame the media and environmental groups for anti-industry bias.
9. Scrimp on resources for communication – Talk is cheap.
10. Wing it – Don’t plan ahead or coordinate with others in your company. After all, communicating is easy.²⁰⁰

Although this list is meant to be tongue-in-cheek, readers no doubt will have experienced one or more items directly at any given public information meeting.

Using the terms of Marshall McLuhan,²⁰¹ the “hottest” site of communication, where knowledge is transmitted and interiorised from generation to generation throughout the ages, is where culture is formed. When communication becomes too “cold”, remote or distant, the culture tends to be closed rather than one of openness. Innis too sees a society’s bias towards time or space in its cultural manifestations.

I do not propose to do more than add a footnote to these comments and in this to discuss the possible significance of communication to the rise and decline of cultural traits. A medium of communication has an important influence on the dissemination of knowledge over space and time and it becomes necessary to study its characteristics in order to appraise its influence in its cultural setting... The relative emphasis on time or space will imply a bias of significance to the culture in which it is imbedded.²⁰²

Culture is what Ian Angus called the “primal scene of communication”²⁰³ which must be recovered when employing any medium of communication or the message will be lost or ignored. If its recipient does not interiorise the message – whether or not they

²⁰⁰ B.J. Hance, Chess and Sandman. *Industrial Risk Communication Manual: Improving Dialogue with Communities*. (Boca Raton, Fla: Lewis Publishers, 1990), 143-144.

²⁰¹ Marshall McLuhan. *Understanding Media: The Extensions of Man*. (Cambridge: The MIT Press, 1994).

²⁰² Harold A. Innis. *The Bias of Communication*. (Toronto: University of Toronto Press, 1999), 33.

²⁰³ Ian Angus. *Primal Scenes of Communication: Communication, Consumerism, and Social Movements*. (Albany: State University of New York, 2000).

agree with it - then it merely flows through, but not to the individual. The site of public communication must, at a base level be one where all parties seek to hear as well as be heard. It must be bi-directional, symmetrical, direct and transparent if it is to be effective, efficient and equitable. In a similar fashion we have come to expect that the water we drink must be of an adequate, sustainable supply that is directly accessible, equitably priced, fairly distributed, and crystal clear. In light of Ian Angus' "primal scene of communication" and post-Walkerton, the British Columbia New Water Policy and legislation and the B.C. Residents' Survey, what is hoped for and anticipated are better communication outcomes which will ably surmount future obstacles presented by monopolies of knowledge and which will enhance successful risk communication in matters concerning water policy and policy formation.

6.2 Policy Recommendations and Potential Implications

The following recommendations are based on three criteria: simplicity, inclusion, and participation. They are intended to enable informed decision-making by both individuals and those charged with forming policies that affect them. They also raise issues that, while out of scope here, are ones that challenge long-standing practices but need to be part of the public discourse and freed from ideological constraints.

In theory, at least, comparative information should be an attractive element of risk messages. We have advised that the best risk messages are those that inform the recipient's actual choices, and increasingly those choices are between courses of action (or inaction) that represent different risks. Risk comparisons ideally might help individuals steer a prudent course between risks of various sizes.²⁰⁴

²⁰⁴ Committee on Risk Perception and Communication, Commission on Behavioural and Social Sciences and Education, Commission on Physical Sciences, Mathematics and Resources, National Research Council. *Improving Risk Communication*. (Washington, D.C: National Academy Press, 1989), 172.

What treatment systems to use (if any), how to fairly distribute costs, what available alternatives are available and when they should be considered, what is in place should something go wrong, and who is accountable and to what degree, are all considerations that require value judgements based on what is best for oneself and what is best for society at-large. Unfortunately, what is best for the individual and what is best for society are not always in concert in the short term, and so a longer view must be maintained. To advocate a policy of water metering may not be in one's personal interests in the short term – it could raise the rate for the individual, or be an act of political suicide for the official that champions it – but in the long term it could ensure the integrity of a system, as well as the integrity of the individuals who put the greater common good ahead of their own.

6.2.1 Public 'At-Large' Representation on all Policy, Planning and Regulatory Bodies

Innis notes in *Empire and Communication* that the 'public jury of one's peers' system is a check on the power of lawyers and their monopoly over the courts.²⁰⁵ William Lyon Mackenzie noted often that the public needed to be more involved in public decision making and this has been the constant mantra of all public policy advocacy groups since then. Public involvement requires two things if it is to be of any value. The first is the willingness to participate. To overcome our current state of public apathy regarding the body politic, citizens must recognize that they can make a difference, and that it is a citizen's democratic duty. The second requirement is that the public be educated on matters of public concern. Many people's eyes simply glaze over when matters of public policy are raised in public discourse because the discourse is riddled

²⁰⁵ Harold A. Innis. *Empire and Communications*. (Victoria: Press Porcépic Limited, 1986), 167.

with obfuscating bureaucratic and technical language. The more complex is the discussion, the less is the general interest; so issues with a high degree of complexity must be able to be communicated in lay terms without withholding pertinent details, and so that lay participants are not intimidated by a lack of specialized expertise.²⁰⁶

The key here is not simply opening up the process, but how to ensure a wide level of participation of the general public when it is. Unlike elections, jury duty obliges public participation. In a similar fashion we should incorporate public jurors for oversight in the policy formation process. In addition to opening up the process to public attendance, this could ensure public participation by not just those interested or with interest in the process, but also by those who are affected by the process whether or not they are interested in it. Jurors could be selected at-large and be obliged to serve unless undue hardship could be demonstrated. A similar process was recently used in British Columbia with the Constituents Assembly for provincial electoral reform.

6.2.2 Regular Water Quality Bulletins

Regular water quality bulletins will inform the public, in addition to the ‘Water-Smart’ education program that targets demand, conservation and awareness. As was stated in a previous chapter, in addition to requiring that all purveyors of water monitor water quality and immediately report any risks to human health, a Water Protection Act should insist on continual active communication of risks to water quality. The current practice of passively posting the information on a website is a handy reference tool, but only if citizens are aware that it is there. All communities in British Columbia should

²⁰⁶ Committee on Risk Perception and Communication, Commission on Behavioural and Social Sciences and Education, Commission on Physical Sciences, Mathematics and Resources, National Research Council. *Improving Risk Communication*. (Washington, D.C: National Academy Press, 1989), 164-167.

publish their water quality tests on a website which can then be picked up by other broadcast or print media. The *Vancouver Sun* publishes the “GVRD Turbidity Report” from the previous day on its Weather page, but, for some unknown reason, its sister paper, the *Province*, does not. Moreover, these published reports are from tests taken at source only. Water quality can change significantly as it flows through the system, and tests taken from all points should be included at least on the website. The community media could then publish the test information for the local area.

6.2.3 A Simplified Water Quality Index

Immediate notification must occur if faecal matter is discovered at any post treatment point in the system, and tests for this should be taken daily. Turbidity should be tested daily at source and then at least weekly throughout the system. In addition, there is a myriad of other compounds whose presence and levels in the water should be monitored. To the average person sifting through all of this data could be confusing and unduly alarming. What is needed is a simple quality index.

What is proposed here is a variation of the ‘Good, Fair, Poor’ scale proposed by the Thompson Health Region’s *Community Advisory Committee Final Report on Drinking Water Quality* (January 2000),²⁰⁷ based on a 10-point, colour scale which factors in all potential contaminants. The highest rating would be given to the purest water. In this way, those marketing spring water would have a comparable standard to which all purveyors, including vendors of bottled water, would be obliged to adhere. This water quality index could also incorporate four colours: green for good (10-7); blue for

²⁰⁷ During 1999, Kamloops experienced no days of good water quality, 265 of fair, and 100 of poor water quality ratings. (Source: *Community Advisory Committee Final Report on Drinking Water Quality*. January 15, 2000).

fair (6-4); grey for poor (3-1) and red or black for anything below. At red or black, a water health advisory would be issued to the public and health officials. This water quality index, along with its explanation, should be published daily and posted on the web and public facilities and be instructive of each *local* water system.

6.2.4 Enable Private Management With Safeguards of Public Access to Water as a Human Right First and a Commodity Second

As was previously discussed, public operation of the water supply system is often justified under the principle of ‘natural monopoly’. This is rationalized by suggesting that because there is often only one source for a community’s supply and only one set of pipes going to each house, that it is best operated by a regulated monopoly, public or private. This was the rationale, at one time, for allowing all of the utilities, including the electrical and telephone systems, to be run by monopoly providers. What this position fails to see in the Canadian waterscape is that we already have a water supply system that competes with the municipal supply (i.e. bottled water and home filtration products). The natural monopoly of the water system ceased to be relevant long before Justice O’Connor wrote the Walkerton Inquiry report that claimed it was still so.²⁰⁸

Privatization is also gaining renewed momentum in British Columbia, where 187 privately owned water utilities have long served approximately 30,000 households. The largest -- White Rock Utilities -- has been operating since 1913.²⁰⁹

Coincidentally, B.C. Residents’ Survey respondents from White Rock had higher than average levels of trust in their tap water.

²⁰⁸ The Honourable Dennis R. O’Connor. “Walkerton Inquiry Report Part 2.” Ontario Ministry of the Attorney General. (Toronto: Queen’s Printer for Ontario, 2002), Ch 10, pg 279. <http://www.attorneygeneral.jus.gov.on.ca/english/about/pubs/walkerton/part2/>.

²⁰⁹ Elizabeth Brubaker, Walkerton: Government's three deadly mistakes, Wednesday, May 31, 2000, National Post. <http://www.environmentprobe.org/enviroprobe/evpress/fpmay00b.htm>.

6.2.5 Investigate Dual Water Supply Systems: One Potable, the Other Grey

This option, along with the city delivering bottled water to residents or installing ‘curbside’ point-of-use treatment devices for all households, was actually considered in the Thompson Health Region. The first two were rejected because they did not meet the Act’s requirement to supply residents with potable water. The laying of a second line was considered to be feasible for new construction, but the excavation of streets to retrofit existing areas was deemed to be too costly an endeavour. Such an undertaking would not likely be able to be done in the public sector alone and would likely require the ‘unbundling’ of this ‘natural monopoly’ and tendering out to the private sector. When the local telecommunications industry was deregulated in Canada, new entrants like Metro Net Communications, ran their own lines rather than lease lines from the incumbent telecom provider. The problem with this scenario is that the only private companies with the resources to do this would be the multinationals – and they already do have an interest in what comes out of your tap.

Bringing new meaning to the term "leaky faucet," Coca-Cola recently announced the development of a system to bring Coke into consumers' homes via a tap on the kitchen sink. This would fulfil former CEO Roberto Goizueta's dream that the "C" on the cold tap would come to stand for "Coke."

In an exclusive interview with London's Sunday Times in March, current CEO Douglas Daft said the company's innovations unit in New York had developed a prototype for the home Coke-on-tap system.

"You would have water mixing automatically with the concentrate and then connect it all up so that when you turn on your tap, you have Coke at home," explained Daft...

... Coke ships syrup to its local bottlers, who must find clean water to mix with it on site. Coke has entered into partnerships with municipalities in India, for instance, to build water filtration systems so their bottlers can get clean water to make soda...

... Coke is willing to invest in places where it won't see a profit for many years ... because it is confident that as economies develop, people will want to drink Coke. The company sent the beverage to starving North Koreans last June. Coke, which, with its bottlers, is the largest private employer on the African continent, has recently reintroduced itself to war-ravaged Angola, bringing its bubbly concoction to a place where more than a million people are fed by the World Food Program of the United Nations. While the Angolan government has provided less than half of its population with an adequate water supply, its partnership with Coke (the government owns a 45 percent stake in the company) will likely mean plenty of clean water for sodas.²¹⁰

Coca Cola's branding campaign of Dasani in the current bottled water market gives further testament to how large the drinking water market is. Coke machines now frequently advertise Dasani as the lead beverage with traditional soft drinks being relegated to secondary status. When considering any option regarding the delivery of potable water, it would be prudent for the public and policy makers to bear in mind the above scene as a potential reversal of the intended outcome.

All of the above recommendations should first be put to focus groups drawn from broad segments of the population to enable them to be contextualized in a manner that is appropriate to the target audience and to reveal where the points of agreement seem to be, as well as to get an indication of any unforeseen ramifications or potential reversals. This commercial advertising and marketing practice is not for persuasion, but rather is a way of determining what will work before it is implemented.²¹¹

²¹⁰ Sonia Shah, "Coke In your Faucet?" (Douglas Daft, executive)(Interview) *The Progressive*, August, 2001. <http://www.findarticles.com>.

²¹¹ Committee on Risk Perception and Communication, Commission on Behavioural and Social Sciences and Education, Commission on Physical Sciences, Mathematics and Resources, National Research Council. *Improving Risk Communication*. (Washington, D.C: National Academy Press, 1989), 159.

6.3 Areas for Future Research

As the subject of water is so vast and complex, there are many areas for future research that were only briefly mentioned here, if at all. First would be a revised water survey of attitudes, habits and perceptions that asks a much larger sample group about private involvement in the delivery of drinking water. In relation to this, a web-based data gathering system should be established so that researchers from other areas could participate using the same questionnaire and protocols and compare results.

There could be a more thorough comparison of all B.C. Provincial legislation that affects drinking water, also a comparison of B.C. to the other provinces, a comparison of legislation between provinces and American states that share water basins, and between Canada and other nations.

The feasibility of dual-line supply systems, in both new construction and retrofits, should be examined in light of the fact that one hundred percent of the water is treated for drinking quality and less than ten percent is consumed. Another related inquiry would be the feasibility of recycling water from certain household uses to others that do not require a potable supply. An example of this would be cycling bath or rainwater through to the toilet.

As a matter of risk mitigation, future research should examine supplying alternative drinking water (i.e. bottled) to areas with chronic water quality problems or to individuals with compromised immune systems. More research and education is also vital in the area of emergency preparedness, both at the personal and community level. An investigation of the obligations of a water-rich nation in the global context of international development should be done in addition to studying water exports, water under NAFTA and other trade deals.

6.4 Concluding Remarks

What *ought* to be at the heart of any policy, piece of legislation or procedural method is that the ultimate aim of these activities is the public good, the overall well being of society – be it a matter of health, economic prosperity or social safety and security. Unfortunately, what *appears* to be at the heart of our present structure is based on self-interest, patronage, largesse, arrogant excess and a penchant for trying to perpetuate monopolies of knowledge and the domination of nature. Truly, in Canada we seem to live in Bacon’s *New Atlantis* where our chief director is from a foreign land and all underlings scurry about to maintain their positions of influence and power by constantly appealing to a mythic Canadian Culture which they define to suit their own ends. What is required is a cultural *recorso* that re-orientes individual goals to the common good.

For four centuries, people have experimented with the secular separation of faith from reason, and to-date, with all our scientific progress and technical marvels, society has only been able to perfect the art of killing and domination despite the initial goals of perfecting humanity. We can’t guarantee clean drinking water for the masses but we can blow them to hell several times over. Still, so many in our post-modern world yearn for transcendence. This requires a cultural shift in the will of the individual from the ‘me’ to the ‘we’. The “power of one” (as Oprah calls it) must be oriented to the “good of the many” or it will devolve into narcissism. This cultural shift is expressed best in secular terms as ‘do unto others as you would have them do unto you’. The dichotomy of free will is that it is either oriented towards choosing good or not. It is the fundamental option. To know the difference is the key and there is no legitimate synthesis of the two.

We must rethink deeply about some of our most widely held assumptions, since many underlie the destructive path we’re on. It is widely believed

that intellect has lifted human beings out of the natural world into a human-created environment. Yet our absolute need for air, water, soil, energy and biodiversity belies that assumption. ...

We assume that even though we are just one of perhaps 30 million species, the entire planet is ours for the taking. We assume that we can manage our natural resources through the bureaucratic subdivisions of government and industry. We assume we can do environmental assessments and cost/benefit analyses to minimize the impact of what we do. All of these assumptions fail to stand up to critical analysis that includes the full ecological cost of our impact.²¹²

Without a transcendent check on our hubris – which leads us to believe we can control, dominate or avoid all risk with minimal responsibility and without regard to unintended consequences - we are destined to repeat the continual struggles for domination and monopolies over knowledge and society which will lead to more Walkerton-like tragedies or some other insidious failure in providing our essential needs.

²¹² David Suzuki. “A Child’s Reminder” In *Whose Water Is It? The Unquenchable Thirst Of A Water-Hungry World*. Edited by Bernadette McDonald and Douglas Jehl. (Washington, D.C: National Geographic Society, 2003), 181.

APPENDICES

Appendix A — University of Calgary Water Survey

1. If you were not at home would you drink unfiltered tap water:
(Check all that apply)

a. in Calgary?	73.1%
b. Rest of Alberta?	51.8%
c. Rest of Canada?	37%
d. USA?	18.6%
e. Everywhere?	7.3%

2. a) Do you have a filter or other water treatment at home?

Yes	56.4%
No	44.6%

 b) Do you buy large bottles of water (e.g. At the market or delivered)?

Yes	35.5%
No	64.6%

3. Do you buy bottled water regularly (more than once a month)?

Yes	65%
No	35%

4. If yes to 3, why? (Check all that apply)

a. Taste	49.9%
b. Purity	39.2%
c. Safety	34.2%
d. Convenience	71.7%
(e.g. portability, accessibility)	
e. Other _____	

5. Do you have a preferred brand?

Yes	23.6%
No	76.4%

Other than the factors from 4 is there any other reason for your brand preference?

Responses were limited, but ranged from taste and safety to availability and marketing/packaging.

Appendix B – Canadian Resident Water Survey (B.C. Residents)

1. Where do you reside? City: See 7.4 appendix C, table 4., Prov: 100% BC
(Stop survey if not a resident of Canada)
2. Have you always lived there? If not, where are you from? Check one & specify name:
Vancouver (lwr mainland) **39%**, BC **12%**, Canada **19%**, USA **1%**, Overseas (including Mexico & Central America) **21%**, NA **8%**
3. Would you drink unfiltered tap water: (Check all that apply)
- In the GVRD? **Yes 73%, No 27%**
 - In other places in the province? **Yes 58%, No 42%**
 - In the rest of Canada? **Yes 49.8%, No 49.7%, NA 0.5%**
 - In the USA? **Yes 30%, No 69.5%, NA 0.5%**
 - Everywhere else in the world? **Yes 18%, No 82%**
4. a) Do you have a filter system or other water treatment at home? **Yes 57% No 43%**
b) Do you buy large bottles of water (e.g. At the market or delivered)? **Yes 35% No 65%**
5. Do you buy bottled water regularly (more than once a month)? **Yes 61% No 39%**
6. If yes to Q. 5, why? (Check all that apply)
- Taste? **43%**
 - Purity? **48%**
 - Safety? **46%**
 - Convenience? (eg. portability, accessibility) **65%**
 - Brand Image? **5%**
 - Other reason? **6%**
 - N.A.? **37%**
7. a. Do you have a preferred brand? (band name not needed) **Yes 25% No 43% N.A. 32%**
b. Other than the factors from Q. 6 is there any other reason for your brand preference?
Yes? 25% (specify) See table 6 No 43% N.A. 32%
8. Other than water delivered to your home by the GVRD do you use any alternative water sources? (i.e. Public fountains, springs or a well)? **Yes 16.5% No 83% NA 0.5%**
9. If yes to Q. 8 why? (Choose all that apply)
- Taste? **22**
 - Purity? **26**
 - Safety? **21**
 - Economic Reasons? **30**
 - Other? **78**
 - N.A.? **664**
10. a. If yes to Q.8, do you pay for the alternative water source? **Yes 3% No 15% N.A. 82%**
b. Would you pay for it? **Yes 6% No 16% N.A. 78%**
11. Do you trust tap water? **Yes 60.5% No 39.2% NA 0.4%**
12. Do you know the source of your tap water? **Yes 46% No 54%**
13. Do you like the taste of your tap water? **Yes 48% No 51% NA 1%**
14. Do you own or rent your home? **Own 48% Rent 51% NA 1%**
15. If you own your home, how hard would it be to refit it with a separate drinking water line to all points of use (i.e. kitchen, bathrooms)?
a. Easy **11%** b. Somewhat Difficult **12%** c. Very Difficult **18%** d. Don't Know **18%** e. N.A. **41%**
16. If you had two sources of water for your home, one for drinking and the other non-potable (for laundry, toilets, etc.) what areas would you have the drinking water piped in your home? a. Kitchen **96%** b. Other locations (i.e. bathrooms) **35%**
c. Laundry **9.5%** d. Bath/shower **26%** e. Sanitary (toilet) **5%** f. Outside taps **7%**

End Survey

Observations: a. Gender: Male **48%** Female **52%**

b. Ancestry: **2%** African, **56%** European, **1%** First Nation, **7%** Indian Subcontinent, **25%** Sino, **8%** Others, **1%** Unknown

c. Approximate age: **34%** 18-25 **25%** 26-35 **18%** 36-45 **11%** 46-55 **5%** 56-65 **4%** 65 + **2%** NA **837** total. Note:

Survey location: **See table 5** Name of Surveyor:

Survey refused? **0/837** in this sample

Appendix C – CMNS 362 Water Survey Tables (B.C. residents)

Table 4 Responses to Question 1a: Place of Residence.

Place of residence (must be Canadian)	Total #	% of total Survey	Place of residence (must be Canadian)	Total #	% of total Survey
Abbotsford	10	1.2%	New Westminster	42	5.0%
Burnaby	105	12.5%	North Vancouver	31	3.7%
Chilliwack	2	0.2%	Pitt Meadows	3	0.4%
Cloverdale	1	0.1%	Port Coquitlam	25	3.0%
Coquitlam	93	11.1%	Port Moody	16	1.9%
Dawson Creek	1	0.1%	Richmond	69	8.2%
Delta	15	1.8%	Surrey	48	5.7%
Fort Langley	1	0.1%	Vancouver	317	37.9%
Harrison Hot Springs	1	0.1%	Victoria	4	0.5%
Hope	1	0.1%	West Vancouver	8	1.0%
Langley	16	1.9%	White Rock	4	0.5%
Maple Ridge	19	2.3%	NA	5	0.6%
			total	837	100.0%

Table 5 Locations Where Surveys Conducted.

observation 3. Survey location	Total #	% of total Survey	observation 3. Survey location	Total #	% of total Survey
Abbotsford	2	0.2%	Skytrain	12	1.4%
Burnaby	10	1.2%	Station Square	2	0.2%
Burnaby - Bus Stop	8	1.0%	Surrey - Chapters Bookstore	3	0.4%
Burnaby – Busloop	6	0.7%	Surrey - Guildford Mall	8	1.0%
Burnaby – Library	1	0.1%	Surrey - Scott Rd. Skytrain	6	0.7%
Burnaby - Lougheed Mall	45	5.4%	Telephone: Coquitlam	1	0.1%
Burnaby – Metrotown	33	3.9%	Transit Bus	2	0.2%
Burnaby – North	3	0.4%	Vancouver	78	9.3%
Burnaby - Revs Bowling	3	0.4%	Vancouver - BC Place	1	0.1%
Burnaby - SFU CMNS Media Lab	4	0.5%	Vancouver - Burrard Street	2	0.2%
Burnaby - SFU Faculty of Education	7	0.8%	Vancouver - Commercial Drive	31	3.7%
Burnaby - SFU gymnasium	4	0.5%	Vancouver - Davie Street	1	0.1%
Burnaby – SkyTrain	2	0.2%	Vancouver - Downtown	13	1.6%
Coquitlam	8	1.0%	Vancouver - English Bay	9	1.1%
Coquitlam – Boston Pizza	1	0.1%	Vancouver - Euro Sports Bar	6	0.7%
Coquitlam - Coquitlam Centre	83	9.9%	Vancouver - Fit Express Gym	2	0.2%
Coquitlam - Value Village	13	1.6%	Vancouver - Georgia Street	3	0.4%
Coquitlam Skytrain Station	2	0.2%	Vancouver - Granville Street	6	0.7%
Ferry to Vancouver	2	0.2%	Vancouver - Harbour Centre	13	1.6%
Fort Langley	5	0.6%	Vancouver - Kerrisdale	5	0.6%
Fort Langley - Wendel's	5	0.6%	Vancouver - Kingsway at Knight Street	1	0.1%
Home	3	0.4%	Vancouver - Pacific Centre Mall	23	2.7%
Langley – Chapters Book Store	8	1.0%	Vancouver - Robson at Burrard Street	3	0.4%

observation 3. Survey location	Total #	% of total Survey	observation 3. Survey location	Total #	% of total Survey
living room	1	0.1%	Vancouver - Robson at Bute Street	3	0.4%
London Drugs	1	0.1%	Vancouver - Robson at Georgia Street	3	0.4%
Lougheed Skytrain Station	3	0.4%	Vancouver - Robson at Granville Street	7	0.8%
New Westminster	39	4.7%	Vancouver - Robson at Howe Street	4	0.5%
New Westminster - Columbia Skytrain Station	4	0.5%	Vancouver - Robson Street	16	1.9%
New Westminster - Public Library	1	0.1%	Vancouver - Seymour at Dunsmuir Street	5	0.6%
New Westminster - Royal City Centre	6	0.7%	Vancouver - Seymour Street	5	0.6%
North Delta – Starbucks	6	0.7%	Vancouver - Smith at Howe Street	1	0.1%
North Delta - Strawberry Hill Library	1	0.1%	Vancouver - Stanley Park	3	0.4%
North Vancouver - Seabus Terminal	13	1.6%	Vancouver - Stanley Park Seawall	6	0.7%
Port Coquitlam	5	0.6%	Vancouver - Tinseltown	4	0.5%
Port Coquitlam - Future Shop	6	0.7%	Vancouver - West Hastings Street	4	0.5%
Richmond	11	1.3%	Vancouver Art Gallery	17	2.0%
Richmond - Lansdowne Mall	9	1.1%	Vancouver Public Library	88	10.5%
Richmond - Richmond Center	28	3.3%	West Vancouver	4	0.5%
Richmond - Vancouver International Airport	3	0.4%	Willowbrook Mall	22	2.6%
Safe Way	7	0.8%	Yohan Center	3	0.4%
Safeway	9	1.1%	Grand Total	837	100.0%



Table 6 Responses to Question 7bii Reasons for Brand Preference


7bii. (specify other reason if yes to 7bi)	Total times mentioned	7bii. (specify other reason if yes to 7bi)	Total times mentioned
aberfoyle	1	Likes the taste	2
added minerals	1	market dominance	1
Attractive Bottle	1	marketing influences	1
bottle design	1	nationalism	1
Bottle design, label looks like spring water, availability	1	no chlorine	1
Brand his business carries	1	non-big corporation companies	1
Cheap	1	Not store brand ex. 7-11 and London Drugs labelled water.	1
convenience	1	peer recommendation	1
cost	2	Prefer to avoid large companies	1
design of the bottle	1	price	10
does not trust tap water	1	reverse osmosis	1
Does nt like Coca-cola products	1	size for dollar	1
Does nt like some brands	1	size of bottle (750mL)	1
Filtered 7 times	1	smoothness	1
filter out chlorine	1	some taste better	1
Friend Recommended	1	sport bottle/squirt top	1
friends recommend it	2	taste	8
gets it free (neighbor)	1	tradition	1
habit	1	Usually cheap	1
Just like it	1	Value for the \$\$\$ (bigger bottle)	1
Know it (marketing)	1	volcanic, from France	1
labeling	1	Water tastes better	1
Like the design	1	Whatever is on sale	2
Likes processing/testing procedures	1	what's on sale/cost	1
likes the blue bottle	1	Grand Total	69

Appendix D – (Poster) Drinking Water Policy: Attitudes and Perceptions Are Key

Drinking Water Policy

attitudes and perception are key



BC Water Facts

- 3300 water systems in BC.
- 90% of population served by 96 systems.
- 10% of population served by 3226 systems.
- Approximately 63 000 private wells.
- 304 boil water advisories in effect in August 2001.

Study to date:

- Survey first piloted at the University of Calgary in the spring of 2003, students surveyed on their uses of bottled water.
- Survey refined and conducted at Simon Fraser University in the summer 2003.
- In the fall 2003 over 1000 surveys conducted by SFU students as part of a Communications Policy & Research Methods course.
- In March of 2004, the results from the survey as well as an interactive poster were presented at the Applied Sciences Institute Exchange 2004.

What we found.

Mixed messages

Chart 1A: Vancouver survey-% that would drink tap water in:

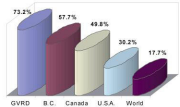
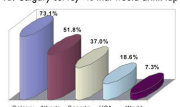


Chart 1B: Calgary survey-% that would drink tap water in:




Charts 1A & B illustrate that the further one gets from their place of residence, the less likely they are to drink tap water. Since 73% would drink tap water in the GVRD and in Calgary, this could infer that there is a high degree of satisfaction with these water systems, indeed, 3/4 of the Vancouver group trust tap water in general; however 65% of these use filtered or bottled water at home. Why?

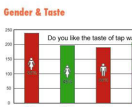
Different Sex, different Attitudes about water

Surveyors also observed the apparent age, and gender of respondents. When these factors were considered, we found slight variations among age groups but more significant differences between males and females.


Gender & Trust




Gender & Taste




Gender & Small bottles



Why buy? - Vancouver



Why buy? - Calgary



Policy Issues

- Is water a human right, a public good, a commodity or three?
- Canadian water systems deliver cheap, almost unlimited supplies of water, with minimal treatment (usually simple filtration and chlorination, is this method sustainable?)
- The policy environment post-Walkerton is changing rapidly and most provinces are now introducing higher standards.
- New drinking water policies have laid higher levels of responsibility on small water system operators/purveyors raising issues of costs, liability and control.

The Future of Water Delivery

A) Continue to treat all the water that flow to users

- All water is safe, and safe water is a public good

BUT

- Need to examine how to reduce consumption
- Need major capital spending on existing systems and in new alternative technologies

B) Do not deliver potable water, but use point of use treatment or alternative delivery systems (eg bottled water)

- Water becomes a commodity.
- Water is treated as required.

BUT

- Will the public accept the delivery of non-potable water?
- What are public attitudes towards the use of bottled water?
- Could municipalities sell and bottle their own water?
- Is water a lifestyle issue?

C) Permit variable delivery systems within jurisdictions:

- Allow flexibility in policy making and system spending

BUT

- Will the public accept private delivery of potable water?
- If under 20% of water coming to a house is used for drinking, then should a separate drinking water line be run? **How do you want potable water?**

Water News

Vancouver Tap Water on Tap:
In a British Columbia study, 73% of 1000 surveyed would drink tap water, 27% had bottled water, filtered daily by 27% had filtered water at home at drinking water.

SFU survey finds mixed attitudes about drinking water?
By News Service, September 3, 2003

Thursing for Justice: Start-up organizers want water reorganized as to sell on tap water is safe
By A.C. Calgary, February 6, 2004 by David Harkin

Come to Chilliwack for the water
The Province, February 21, 2004

Coke selling London tap water?
The Province, Tuesday March 2, 2004

Coke in your faucet
The Province, August 2002, by David Harkin

Is there a policy-perception-disconnect?

The majority of BC residents trust and like the taste of their tap water, and yet the majority surveyed also filter or buy bottled water.

Why?
As it turns out, 65% of the BC residents surveyed buy bottled water for convenience, but high numbers (40%+) said they buy water for concerns of safety, taste and purity. The Calgary survey had similar results, but with even higher numbers buying bottled water for convenience (71.7%) and taste (49.9%).

Do these facts suggest that people have lost faith in the supply? Also if people are turning to bottled and filtered water, despite the tested safety of the municipal supply, should all water be treated for drinking purposes or should water treatment responsibility trickle down to the end user?

How Much Water Do We Need?

UNESCO's basic water requirement is around 30 litres per day

The average consumption in the GVRD is over 300 litres per capita per day

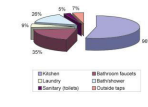
In the developing world the average person uses 10 litres per day.

Where Does all our water go?

Clothes Washers-23% Faucets-14% Showers-14%
Toilets-30% Leaks-10% Baths-6% Dishwashers-2%
Other-1%

Retrofit




Retrofitting large urban centers with a separate water line may seem like a non-starter, but water is big business. Telecom deregulation showed that new entrants were willing to run their own cable and there is major corporate interest in the water beyond bottling it.



Future Research

As water is increasingly seen as a scarce resource more citizens are concerned about how we use, or misuse our supply. We need to raise awareness, but a broader survey would provide data more reflective of all Canadian's attitudes. A website is also planned which will facilitate online data collection and gathering to enable national co-ordination of local surveys, but issues of accuracy and jurisdictional co-operation remain. This site could also serve as a clearing house and forum for policy issues related to drinking water. More investigation is also needed on: public/private initiatives for water supply and distribution; large-scale vs point of use treatment systems; and the "marketing" of tap water.

Poster Design and Research by: Paul Krueger (pkruereg@sfu.ca), SFU-Communications Graduate Student, Research Assistant for the Centre for Policy Research on Science and Technology, with thanks to: Faculty Supervisor: Prof. Adam Holbrook (jholbroo@sfu.ca); SFU Undergrad RAs Steven Reddy and Weslo Wong; and Graphic design by Wilson Nam, SFU-Continuing Studies

Appendix E– Water Taste Test Data

Table 7 Which Water Tastes Best?

Which water Liked best: (1=tap water; 2=spring water; 3=RO water)	Total	Percentage of Total
1	42	40%
2	29	27%
3	35	33%
Grand Total	106	100%
Finding1: Tap on Top in close call! 40% liked tap best, while 33% liked RO, followed closely by 27% liking spring water best.		

Table 8 Which Water is From the Tap?

Which was thought to be tap water (1=tap water; 2=spring water; 3=RO water)	Total	Percentage of Total
1	40	38%
2	38	36%
3	28	26%
Grand Total	106	100%
Finding 2: Hard to tell which water is which - 38% correctly id'd tap water, while 36% though the spring water was tap and 26% though RO water came from the tap.		

Table 9 Which Water Liked Best and Which Was Thought to be Tap Water.

Which water Liked best: (1=tap water; 2=spring water; 3=RO water)	Which was thought to be tap water (1=tap water; 2=spring water; 3=RO water)	Total	Percentage of Total
1	1	8	19%
	2	21	50%
	3	13	31%
1 Total		42	100%
2	1	16	55%
	2	4	14%
	3	9	31%
2 Total		29	100%
3	1	16	46%
	2	13	37%
	3	6	17%
3 Total		35	100%
Grand Total		106	
findings 1	those that like tap water best, don't know what they're drinking (only 19% correctly id'd the tap water)		
findings 2	those that liked spring (2) water best, were the best at id'ing tap water		
findings 3	those that like RO (3) water best, hard time telling the dif between tap (46% correct) & spring water		

Table 10 Which Water Was Thought to be Tap Water and Which Water Was Liked Best.

Which was thought to be tap water (1=tap water; 2=spring water; 3=RO water)	Which water Liked best: (1=tap water; 2=spring water; 3=RO water)	Total	Percentage of Total
1	1	8	20%
	2	16	40%
	3	16	40%
1 Total		40	100%
2	1	21	55%
	2	4	11%
	3	13	34%
2 Total		38	100%
3	1	13	46%
	2	9	32%
	3	6	21%
3 Total		28	100%
Grand Total		106	100%

finding 1	which ever was selected as tap water, was least liked by that group; suggesting that people do not admit to liking tap water
ie 1	of those that thought RO was tap, 46% liked tap best, then 32% spring and only 21% RO
ie 2	of those that thought Spring was tap, 55% liked tap best, then 34% RO, and only 11%spring
ie 3	of those that thought tap was tap, only 20% liked tap best, and 40% liked spring and 40% liked RO best

Appendix F – Overview of Federal, Provincial, Municipal, and International Water Legislation, Policies and Treaties and Agreements

Overview of Federal Water Legislation and Policies

The constitutional authority of the federal government to legislate matters relating to drinking water stem from its power over “navigation, fisheries, and agriculture, as well as the broad peace, order, and good government and federal spending powers...”²¹³ The federal government of Canada has exclusive jurisdiction and direct responsibility over drinking water on First Nations reserves, in the territories and in National Parks lands.²¹⁴ The federal government may also take over any public work deemed “to be of general advantage to Canada or to two or more provinces.”²¹⁵ The Parliament of Canada also has exclusive power over international relations – of particular relevance to water because much of it in Canada either flows across our shared border with the United States of America or is collected by geographical formations that pay no heed to such political constructs.²¹⁶

The Ministry of the Environment and Ministry of Health (or as so named) have been the lead federal ministries that administer water policy and legislation in Canada.

The Guiding Policy governing water issues has not been updated since the Federal Water Policy of 1987. Apparently, the same issues then remain today and so the policy remains unchanged – or has not been revisited – since then.

²¹³ Environment Canada, The Green Lane, Environment Canada's World Wide Web site.-National Water Issues Branch, “Federal Water Policy” (2001), 23.

http://www.ec.gc.ca/water/en/info/pubs/fedpol/e_fedpol.htm#7.

²¹⁴ Ibid.

²¹⁵ Ibid.

²¹⁶ Ibid.

“Despite the date of publication, many of the issues and strategies outlined in the 1987 Policy remain valid today. Since no more recent published policy can be offered at this time, the text of the 1987 Policy is offered for information purposes only.”²¹⁷

Legislation administered by Environment Canada includes:

The International River Improvements Act (1955), which provides for licensing of activities that may alter the flow of rivers flowing into the United States;

The Canada Water Act (1970), which contains provisions for formal consultation and agreements with the provinces; [and requires annual reports to parliament].

The Government Organization Act (1979), which assigns the national leadership for water management to the Minister of the Environment.

Canadian Environmental Protection Act (1999).

International Boundary Waters Treaty Act (R.S. 1985, c. I-17) ; Bill C-6²¹⁸

Other pieces of federal legislation that relate to water are: the *Fisheries Act*, the *Navigable Waters Protection Act*, the *Yukon Waters Act*, the *Northwest Territories Waters Act*, the *Arctic Waters Pollution Prevention Act*, the *Canada Shipping Act*, and the *Dominion Water Power Act*.²¹⁹

Health Canada’s main role in drinking water regulation relates to matters of public health and safety. Legislation in this area is limited to the *Drinking Water Materials Safety Act*, (December 11, 1996) which is designed “to prevent the sale and import of unsafe drinking water materials in Canada.”²²⁰

²¹⁷ Ibid.

²¹⁸ West Coast Environmental Law. *BC Guide to Watershed Law and Planning*. BC Watersheds. “Water Quality (Drinking Water).” <http://www.bcwatersheds.org/issues/water/bcgwlp/j17.shtml>.

²¹⁹ Ibid.

²²⁰ Health Canada. “Water Quality and Health”, (2003). <http://www.hc-sc.gc.ca/hecs-sesc/water/index.htm>.

Health Canada also has several publications that correspond to the activities it conducts together with the provinces and territories. These are: “Trichloroethylene in Drinking Water”; “The multi-barrier approach to safe drinking water.”; “Guidelines for Canadian Drinking Water Quality”; and the “Guidelines for Recreational Water Quality”.²²¹

Two of the federal-provincial joint commissions are: the ‘Chlorinated Disinfection By Products Task Group’ and the ‘Federal-Provincial-Territorial Committee on Drinking Water’. Health Canada also produces several documents for public comment. The Federal-Provincial-Territorial Committee assesses the exposure to and effect on human health of naturally occurring and chemically produced contaminants found in Canadian drinking water. This committee also produces national drinking water quality guidelines to which most jurisdictions adhere – though they are not bound to do so. Health Canada also conducts research on drinking water technologies and treatment processes.²²²

Health Canada also participates in a biennial national drinking water conference and in the annual ‘Safe Drinking Water Week’ that takes place in early May each year. It has developed the ‘Blue Thumb’ water education project and has instituted ‘Blue Thumb Week’ as its main public education tool. Health Canada also supports the Water Quality Fitness Forum to “provide information to our community on the state of our drinking water quality -- what's in it and what isn't”²²³ and involves local groups along with any provincial, territorial or federal agency that is involved with the quality of drinking water.²²⁴

²²¹ Ibid.

²²² Ibid.

²²³ Ibid.

²²⁴ Ibid.

Official Canada-U.S. agreements : St. Lawrence Seaway Project (1952); Great Lakes Water Quality Agreement (1972, 1978, 1987); Water Supply and Flood Control in the Souris River Basin (1989).²²⁵

Overview of Provincial Water Legislation and Policies

As noted above, there exists no explicit constitutional foundation for the provinces' control over drinking water; rather, this foundation rests on the constitutional proprietary rights over the natural resources within its borders.²²⁶

Their competence to legislate in water matters derives from their jurisdiction over management of public lands, over property and civil rights and over matters of a local and private nature. Provinces, therefore, have authority to legislate in areas of domestic and industrial water supply, pollution control, non-nuclear thermal and hydroelectric power development, irrigation, and recreation. They have delegated some of this responsibility to local government bodies.²²⁷

In Part Two of the Walkerton inquiry, Justice O'Connor identifies the specific sections of the Canadian Constitution that are used to determine the jurisdictional powers of the provinces over drinking water.

Four powers set out in section 92 of the Constitution provide the provinces with a broad jurisdiction over drinking water safety: local works and undertakings (s. 92(10)); property and civil rights in the province (s. 92(13)); matters of a local or private nature (s. 92(16)); and municipal institutions in the province (s. 92(8)). In addition, section 109 gives the provinces jurisdiction over natural resources. This is reinforced by section 92A, which provides the provinces with exclusive jurisdiction over the development, conservation, and management of non-renewable resources.²²⁸

²²⁵ Ibid.

²²⁶ Ibid.

²²⁷ Ibid.

²²⁸ The Honourable Dennis R. O'Connor. "Walkerton Inquiry Report Part 2." Ontario Ministry of the Attorney General. (Toronto: Queen's Printer for Ontario, 2002), Ch 2. <http://www.attorneygeneral.jus.gov.on.ca/english/about/pubs/walkerton/part2/>.

In addition to the Constitution Act, there are several Provincial Acts that govern drinking water in the Province of British Columbia.

The Water Act (Ministry of Sustainable Resource Management; Ministry of Water, Land & Air Protection): says that all water running in surface watercourses in the province is owned by the provincial government, and is only to be used as authorized by the provincial government (although a limited exception still exists for domestic use). Although this ownership could easily be made to extend to groundwater as well, this has not occurred to date. Groundwater remains largely unprotected by the provincial government.²²⁹

The Waste Management Act protects a water-body by requiring a permit to introduce any waste into the environment – be it ground or water waste. The Water Management Act creates specific rules for specific types of waste that may be discharged.²³⁰

The Drinking Water Protection Act under the Minister of Health Services contains restrictions on introducing toxins into drinking water. As well, it allows the Minister of Health Services to order the creation of a Drinking Water Protection Plan in cases where the Provincial Health Officer believes that treatment or other steps are unlikely to protect drinking water.” “...The Drinking Water Protection Act expands the responsibilities of water providers to ensure that drinking water is potable.

The Water Protection Act prohibits the bulk export of drinking water from B.C. Unlike the Water Act, the Water Protection Act applies to groundwater, as well as to surface water.²³¹

The Water Protection Act of British Columbia also bans the export of water out of the province – except in containers of 20 litres or less, which just happens to be the size of the large ‘cooler-type’ bottled water.

²²⁹ West Coast Environmental Law. *BC Guide to Watershed Law and Planning*. BC Watersheds. “Water Quality (Drinking Water).” <http://www.bcwatersheds.org/issues/water/bcgwlp/j17.shtml>.

²³⁰ Ibid.

²³¹ Ibid.

Because groundwater is not covered by the Water Act, **the common law** (judge-made) laws about groundwater quality continue to apply. Generally, a person with a well has no right to continued flow of groundwater (e.g. if an aquifer dries up the water user can do nothing). However, he or she does have a right not to have the flow of water contaminated.

The Water Utility Act under the Ministry of Sustainable Resource Management) regulates commercial water providers, with the Comptroller of Water Rights (an officer in the Ministry of Sustainable Resource Management) having power to approve new water utilities, oversee rates, ensure that maintenance is done, etc.²³²

It must be noted here that although the province has the primary legislative authority over drinking water, they have ‘downloaded’ the responsibility to carry out the legislation onto the purveyors of water, which in most cases are the municipalities, a creation of the provinces. This may also involve a private company in varying degrees.

Overview of Municipal Powers

As purveyors of water, municipalities have the most direct responsibility over drinking water. As such, they are bound by the *Drinking Water Protection Act* to provide potable water to those connected to its distribution system.

Municipalities can set water rates, and how these rates are applied (either by flat rate or metered). Municipalities can also restrict water use by creating bylaws that proscribe certain uses of water for purposes other than drinking, cleaning or sanitation. For example, many municipalities impose lawn-watering restrictions during times of water scarcity in the summer months. All purveyors of water, whether a municipality or a

²³² Ibid.

contracted vendor, are bound by the *Drinking Water Protection Act* to provide *what the legislation considers to be* potable water.²³³

In the event that water quality is below acceptable levels, the municipality, in coordination with the regional health authority and provincial water officer, issues boil-water advisories and lifts them when the situation is remedied.

Overview of International Water Laws, Treaties and Conventions

There are several international water laws and conventions that address water. The most recent position of the United Nations with regard to water and drinking water is contained in the *Dublin Principles* and corresponding action plan entitled “Agenda 21”, both the result of the 1992 *International Conference on Water and the Environment*.

The *Dublin Principles* highlight some of the conceptual difficulties in formulating policies that view water as both an economic and a human rights issue. There are four guiding pillars of the *Dublin Principles*:

One. Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment;

Two. Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels;

Three. Women play a central part in the provision, management and safeguarding of water;

Four. Water has an economic value in all its competing uses and should be recognized as an economic good.²³⁴

²³³ Here it must be reiterated that even the development of seemingly innocuous scientific water quality standards (or any other) are subject to monopolies of knowledge in their formation.

Many international, multi-lateral and bi-lateral agencies including the World Bank, have adopted these as guiding principles when establishing development and assistance criteria.²³⁵ In some instances, these principles have collided violently in the streets where many affected people protested the emphasis put on the fourth principle, that water is an economic good, superseding the first, that recognizes water as essential and the second, which calls for participation at all levels, including users, in the formation of water development and management policies.²³⁶

The action plan that accompanied the *Dublin Principles* is known as “Agenda 21”. It too calls for full participation of all levels in policy formation and a “multi-sectorial approach” to sustainable water management that would presumably involve both the private and public sectors and include those involved with water and wastewater treatment, the environment, civil planners and user groups. “Agenda 21” was endorsed by over 170 nations of the United Nations at Rio in 1992 and was reaffirmed by the UN member nations at Johannesburg in 2002.²³⁷ The Johannesburg conference saw the creation of the Global Water Partnership (GWP 2002) which again calls for what is apparently a new paradigm that is: “open and transparent; inclusive and communicative,

²³⁴ The World Meteorological Organization. *The Dublin Statement On Water and Sustainable Development*. (Geneva: The World Meteorological Organization, 2004). <http://www.wmo.ch/web/homs/documents/english/icwedece.html>.

²³⁵ Dr. Karen Bakker and David Cameron. “Good governance in municipal restructuring of water and wastewater services.” (Occasional Paper). (Toronto: Munk Centre for International Studies, University of Toronto 2002). Water Governance and Water Privatization – facts and analysis, “Good Governance Principles for Water Management”. <http://www.geog.ubc.ca/~bakker/principles.htm>.

²³⁶ In Bolivia the government’s privatisation of water with the multinational Bechtel corporation the population took to the streets to protest the World Bank’s directed ‘full cost recovery program’ for running the water system and were fired upon by their own government. (source: *The Corporation*. Documentary film). In South Africa some have waged a metering smashing and guerrilla hook-up campaign. (Source: Lauren McMahon. “Water meters: the new apartheid.” *The B.C. Catholic*, Vol. LXXIV, No. 39. October 25, 2004, 4).

²³⁷ Dr. Karen Bakker and David Cameron. “Good governance in municipal restructuring of water and wastewater services.” (Occasional Paper). (Toronto: Munk Centre for International Studies, University of Toronto 2002). Water Governance and Water Privatization – facts and analysis, ‘Good Governance Principles for Water Management’ <http://www.geog.ubc.ca/~bakker/principles.htm>.

coherent and integrative, equitable and ethical” yet still focussed on “performance and operation” and is “accountable, efficient, responsive and sustainable.”²³⁸

According to Karren Bakker, “the Global Water Partnership is one of the most influential international water policy think-tanks.... It is generally viewed as being pro-privatisation.”²³⁹

Most of the international water legislation is in the form of treaties between neighbouring nations. For Canada, these treaties are with the United States of America only. The *Canada-U.S. Free Trade Agreement* and the *North American Free Trade Agreement* do not deal with water, and B.C. has banned the export of bulk water out of the province in the *Water Protection Act* (1996). The export of freshwater is not, however, completely prohibited as it can still be done in unspecified quantities so long as it is in containers of no more than twenty litres and is packaged in B.C.²⁴⁰

The *International Boundary Waters Treaty Act* of 1909 established the International Joint Commission. This commission reports directly to both the Canadian and U.S. governments and has created several bilateral boards that correspond to particular water basins to carry out its mandate. Some of these are boards of control while others are focussed on investigative and engineering matters.

The Canadian-U.S. International Joint Commission (IJC), has been praised as a model for trans-national resource management.

²³⁸ Ibid.

²³⁹ Ibid.

²⁴⁰ BC Ministry of Health Services. *Drinking Water Protection Act*. (Victoria, BC, Canada: Queen's Printer, 2001).

“... its careful balance and perceived objectivity have meant that its decisions are seldom challenged by either government.”²⁴¹

Though this treaty has been hailed as a model for cross-border resource issues, it must be noted that it was signed between the Governments of Great Britain and the United States and, though the Canadian representation on the Commission is selected by the Canadian Government, the treaty should be reviewed to make sure that it reflects Canada’s national interests as opposed to the colonial interests of the British Empire.

Other international conventions and agreements that have an impact on Canadian water resources include: Multilateral Agreements - the *United Nations Framework Convention on Climate Change* and the *Kyoto Protocol*, *Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention)*, the *Stockholm Convention on Persistent Organic Pollutants (POPs)*, the *Convention on Environmental Impact Assessment in a Transboundary Context*, the *North American Agreement on Environmental Cooperation (NAAEC)*, the *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal*, the *Canada U.S.A. Agreement on the Transboundary Movement of Hazardous Waste*, the *Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Dumping Convention)*²⁴²

²⁴¹ Marq De Villiers. *Water*. (Toronto: Stoddart Publishing Co. Limited, 1999), 285.

²⁴² Environment Canada, The Green Lane™, Environment Canada's World Wide Web site. “International Relations: Multilateral Agreements”. http://www.ec.gc.ca/international/multilat/mea_e.htm.

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