Abstract

Water is a matter of Public Health. Without proper drinking water, it is impossible to be healthy and this one of the reasons why First Nations have the lowest health status in Canada. The past two decades, at least two thirds of reserves have experienced problems to access clean drinking water. Access to fresh clean drinking water is limited because of major repairs needed (sewers and pipes) and industrial pollutants, or simply because they do not even have tap water in the house in some communities. As of December 2016, in 80 First Nations communities (south of the 60th parallel) there were 31 short-term drinking water advisories (DWA) and 96 long-term DWA (British Columbia First Nations and communities within Saskatoon Tribal Council are not included in those numbers) (Government of Canada, 2017). These advisories are: ‘boiling water’ (BWA) or ‘do not consume’ (DNC) (DNUA) for drinking, cooking, feeding pets, brushing teeth, washing fruits and vegetables, making infant formula or other drinks, bathing toddlers or infants. Some communities have been under water advisories since 1999 (in Quebec DNC), Deer Lake in Ontario (BWA since 2001), for instance. “First Nations are responsible for 20 per cent of the costs of maintaining water and sewer systems, and the federal government funds the rest.” (Stastna, 2011). Starting in 2016, Canada has committed to end long-term DWAs on reserves within 5 years. However, Canada must also protect the rivers and the lakes in order to protect everyone’s health.
INTRODUCTION

Canada is a very wealthy country and one of richest in water, where 99.8% Canadian takes for granted access to good quality tap water and sanitation. However, the First Nations are not automatically granted this basic comfort. The past two decades, at least two thirds of the Reserves have known episodes of water problems leading from Boiling Water Advisories (BWAs) to orders not to consume. Access to fresh clean drinking water is limited because of major repairs needed (sewers and pipes) and industrial pollutants, or simply because they do not even have tap water or sanitation in the house in some communities, having ‘Third World’ living conditions. Not surprisingly, the First Nations also have the second lowest health status in Canada and this lasting water crisis puts them at risk. If the problem is huge, it is not impossible to fix it with a strong political will, but it will take important budgets and many more years. After all, safe drinking water is considered as a basic human right that has been denied to many First Nations reserves for several decades. In addition, because of the importance of safe drinking water, and with climate change, we must ensure that water will be protected for the generations to come.

1. WATER IS LIFE: SAFE DRINKING WATER IS A BASIC HUMAN RIGHT

No life is possible without water. Human body is made of 75% of water. It needs water to regenerate the cells, not any kind of water, but clean and safe water to remain healthy. For the WHO (2011, p. 83), “Based on currently available data, a minimum volume of 7.5 litres per capita per day will provide sufficient water for hydration and incorporation into food for most people under most conditions. In addition, adequate domestic water is needed for food preparation, laundry and personal and domestic hygiene, which are also important for health.”

1.1. No safe water, no health

There is no health possible without safe drinking water. Louis-Claude Vincent (1906-1988), a French an engineer specialised in hydrology and in public health went further. As early as 1936, he observed that the mortality rates of illnesses of all types, and in particular tuberculosis, cardiovascular disorders and cancers, were directly linked to the quality of the water delivered to the concerned populations. Those rates were increasing when this water was very mineralised and made artificially drinkable after physical treatments and the addition of oxidizing chemical products” (Fougerousse, 2013, p. 1).

The World Health Organization (WHO) and different researches and reports confirm Vincent’s observations: “Contaminated water and poor sanitation are linked to transmission of diseases such as cholera, diarrhoea, dysentery, hepatitis A, typhoid and polio. Absent, inadequate, or inappropriately managed water and sanitation services expose individuals to preventable health risks.” (WHO, 2016). Combined with malnutrition, it makes the situation worse (WHO, 2001).

In Canada, reports and researches about First Nations’ water problems see a direct relationship between water quality and health as well (Health Canada, 2015; Indigenous and Northern Affairs Canada, 2016). A variety of factors can trigger a water advisory, ranging from bad water infrastructures, bad pipe connections, low pressure, improper filtration and disinfection right up to contamination with bacteria, and even a lack of road to reach the reserve (i.e. Shoal Lake N° 40). McClearn (2017) and already the Council of Canadians (2010) have identified the problem with the design of water systems built since 2005, but also the lack of skilled persons to maintain them: It affects 1/8 of 103.

Recently, surveys made by the David Suzuki Foundation and the Council of Canadians (2017) and Human Rights Watch (2016) have studied the water quality on several Ontarian reserves. For Human Rights Watch (2016 a) “Tainted water and broken systems on Ontario’s First Nations reserves are jeopardizing health.” Boyd (2011, p. 81) mentions that the adverse health effects of this situation on the residents are high rates of communicable diseases such as influenza, whooping cough, shigellosis, and impetigo. North Caribou Lake First Nation (Talaga, 2016) reports skin problems such as eczema, psoriasis, and stomach aches. For 20 years, some reserves have not had the “luxury” to have a tap glass of water or take a bath. Harsh living conditions lead to very high suicide rates on First Nations reserves.

McClearn (2017) explains, “Most treatments use
chlorine to disinfect water. But chlorine can reach and dissolve organics to from a by-product called trihalomethanes, which are considered carcinogenic." It makes water more acidic, what damages the membranes used to filter the water, unable them to remove organics. Serpent River First Nation, in Northern Ontario, is an example; with a rate of trihalomethanes that is almost the double of the accepted level, there are many cancer deaths among members who have worked in nearby Elliot Lake uranium mines.

Human Rights Watch (2016 a) also underlines that "The water on which many First Nations communities in Canada, on lands known as reserves, depend is contaminated, hard to access, or toxic due to faulty treatment systems. The federal and provincial governments need to take urgent steps to address their role in this crisis."

Contaminants in drinking water on First Nations reserves visited by Human Rights Watch included coliiform, *Escherichia coli* (*E. coli*), cancer-causing Trihalomethanes, and uranium. Some of these are naturally occurring; some likely result from poor wastewater management on and off reserves, and others result from organic material in dirty source water reacting with chemicals meant to disinfect it. Exposure to these types of contaminants can have health impacts that range from serious gastrointestinal disorders to increased risk of cancer. (Human Rights Watch, 2016 a, p. 3)

**ONTARIO Grassy Narrows** First Nation reserve (Ontario) has struggled with mercury for the past 50 years, having the highest level in Ontario, and the contamination ruined its economy.

Reed Paper in Dryden, Ont., dumped chemicals in the river in the 1960s and early 1970s, resulting in mercury poisoning among First Nations people who ate fish caught in the area. ...The contamination closed the commercial fishery that was the foundation of the economy at Grassy Narrows First Nation. With little money and no local grocery store, residents have continued to eat the fish throughout the years. (Council of Canadians, 2016)

Poisson and Bruser (2016) also report new analysis using provincial data reveals that mercury in an average meal of walleye from Clay Lake is 15 times the daily intake limit for adults. As a result, "A large portion of the Grassy community suffers from mercury poisoning- including from symptoms such as loss of motor function, tingling and weakness in their limbs, and difficulty walking, speaking and swallowing – some fifty years after the issue first came to light" (Council of Canadians, 2016). The Kashechewan First Nations reserve (Ontario) has been forced to evacuating 1,000 of its residents because of poor quality and unsanitary conditions in 2005 (Council of Canadians, 2016). When it comes to First Nations, great poverty and malnutrition make the situation worse. As a matter of fact, First Nations have one of the lowest health status in Canada, with a shorter life expectancy than Canadians; Men's life expectancy was projected to be 79 years for Canadians and 73 years for First Nations, and 83 years for Canadian women vs. 78 years for First Nations women (Statistics Canada, 2015).

1.2. What is the healthy water pH?

However, safe and healthy water must have some characteristics. Not only the water must be treated to eliminate different bacteria, viruses and heavy metal and other chemical, but it must also have a correct pH. The pH of water is important for people's health. Health Canada recently completed its review of the pH of drinking water. Based on this review, the operational guideline for the pH of finished drinking water is an acceptable range of 7.0 to 10.5. A higher pH (up to 10.5) in the distribution system will result in lower concentrations of lead and other metals at the tap (Health Canada, 2015).

1.3. Safe drinking water: A basic Human Right

Because water is life, it is precious and considered as a human right, not a privilege. The United Nations has recognized safe drinking water and proper sanitation as a human right on September 23, 2011, encouraging governments to implement plans of action and make these services affordable for everyone, creating accountability mechanisms and legal remedies (Lui, 2015, p. 9; WHO, 2011). Earlier, on July 28, 2010, 122 countries had voted to pass a resolution on that subject. Although Canada signed this resolution later, in June 2012, it has not been implemented yet in all the communities, especially the First Nations reserves that have been under boiling water advisories for some time (the longest being 22 years) (Council of Canadians, 2016).

1.4. Most Canadians have abundant good quality water

Canada has abundant water with its 4,500 rivers and several thousands lakes, representing 3% of the world's fresh water (Économie d'eau, 2010). Generally, in Canada, people have good to high
quality water. According to the Conference Board of Canada (2013), the quality of drinking water has improved the past 30 years. Canada even earned an “A” grade on water quality, ranking 4th place out of 17 OECD countries.

According to Levasseur and Marcoux (2015), Canadians are at first or second rank regarding the use of water. Économie d’eau (2010) mentions that Canadians daily use 781 L of water per person (800 L in Québec and 600 L for the rest of the country), and another one (McGill, 2015) mentions 1104 L per day and per person in Montréal and the double in Toronto and Vancouver (based on OECD 2000 data). The average Canadian uses about 329L of water per day and per person, and the average Quebecer uses 400 L of water per person (McGill, 2015). In addition, according to Human Rights Watch (2017), the average daily residential water use was 251 L per person in 2011.

Unfortunately, while Canada’s water quality has improved for most Canadians, the opposite has occurred for many First Nations Reserves (Conference Board of Canada, 2013).

2. WHEN FIRST NATIONS ARE DENIED THIS BASIC HUMAN RIGHT

Boyd (2011, p. 81) goes back to the promise made by the Canadian federal government in 1977, promising to provide reserves with water and sanitation services comparable to similarly situated non-Aboriginal communities. Forty years later, the First Nations still have high-risk water systems. In fact, “The Canadian Government does not recognize the right to water, either internationally or domestically” (Boyd, 2011, p. 85). Dunn, Bakker and Harris (2014, p. 4634) explain that, “Canada is (along with Australia) only one of two Organization for Economic Cooperation and Development (OECD) member states that does not comply with the World Health Organization’s (WHO) recommendation that all countries have national, legally binding drinking water quality standards.” Having safe drinking water is therefore not granted to First Nations. Indeed, “compared to other Canadians, First Nations’ homes are ninety times more likely to be without running water” (Boyd, 2011). In fact, the past two decades, two thirds of First Nations reserves have not had always access to safe drinking water, on short, longer and very long periods. “It's absolutely outrageous,” said Cindy Blackstock, director of the First Nations Child and Family Caring Society and associate professor at the University of Alberta. "That very absolute necessity of life is being denied to a whole group of people in this country as wealthy as ours" (Levasseur & Marcoux, 2015). Water has a very important value in their spirituality (First Nations Health Authority, 2017). “Water is sacred. We are made up of water just like parts of the surface of the earth. Water is our first teaching; it sustains life. Can you imagine a place where the water is considered toxic? This is life in Aamjiwnaang”1 (David Suzuki Foundation & The Council of Canadians, 2017, p. 16).

The Canadian Charter of Rights and Freedoms (1982) protects people’s rights in Canada. Boyd (2011) states that the Canadian Government violates Sections 7 and 15(1) (the Right to Equality) of the Charter. First Nations are discriminated because they cannot access the same services; Their human rights are definitively violated (Mitchell, 2017) and still 1 out of 4 people in First Nation reserves will not have clean water (Council of Canadians, 2017 a).

2.1. Third World conditions: No tap water, no toilets

On many reserves, First Nations communities live in Third World condition (Levasseur & Marcoux, 2015; Human Rights Watch, 2016 a & 2016 b). Not only about half of their houses need major repairs, but also they do not even have tap water or toilets indoor. For instance, Stastna (2014) indicates that 600 kilometres northeast of Winnipeg (Manitoba), more than 60% of residents in the Wasagamack Oji-Cree from actions of the government in Canada. There are three types of protection within the section, namely the right to life, liberty, and security of the person.

Denials of these rights are constitutional only if the denials do not breach what is referred to as fundamental justice. « Retrieved from (https://en.wikipedia.org/wiki/Section_7_of_the_Canadian_Charter_of_Rights_and_Freedoms)
community lack indoor plumbing. The toilets are in sheds outside and there is a huge lack of water infrastructure, and sometimes an inexistent road is the main problem to access and send basic necessities (Shoal Lake N°40, for instance). In December 2015, Minister Bennett announced the government would fund for a road to School Lake First Nation and a new plant for Neskantaga First Nation for 2016 (Porter, 2015); these reserves have been under BWA for 20 to 22 years.

Deprived of safe drinking water, their population who have the lowest income in Canada, must buy expensive bottled water, because the water must be boiled or cannot even not consumed at all. Bottled water creates two major problems. On one hand, bottled water is not healthy because it is dead water and not always very safe. On the other hand, the Council of Canadians (2017) underlines the burden on the environment and the pollution those bottles create. It takes indeed 5.5 litres of water to produce a 500 ml bottle: "0.5 litres in the bottle and 5 litres contaminated when making the plastic bottle from oil."

Safe water is everyone’s responsibility: The federal government (80%) and the Reserves (20%) (Health Canada, 2015). Unfortunately, many Reserves cannot afford to pay their share. To solve the problems, the Government must invest a huge amount and develop strategies to evaluate the progress.

2.2. 400 out of 618 First Nations under DWAs between 2004 and 2014

There are great disparities to access water whether or not you live on a First Nation reserve. While most Canadians have access to one of the best water quality in the world (Human Rights Watch, 2017), First Nations have been struggling with safe water for many years to have safe drinking water (more than 21 years (Neskantaga Reserve in Ontario). Safe drinking water is even considered as a luxury (Stastna, 2014). If Canada has abundant water, yet water in many indigenous communities in Ontario is not safe to drink, Human Rights Watch states.

Health Canada (2017) defines three types of drinking water advisories (DWAs): A “long-term” water advisory has been lasting for over 1 year: 1) boil water advisories (BWAs); 2) do not consume advisories (DNCAs); 3) do not use advisories (DNUAs).

Suzuki (2017) specifies, “Water advisories vary in severity. A “boil-water advisory” means residents must boil water before using it for drinking or bathing. “Do not consume” means water is not safe to drink or consume, and a “do not use advisory” means water is unsafe for any human use.”

For Health Canada (2017) a BWA means that one must boil water before: drinking, cooking, feeding pets, brushing teeth, making soups or ice cubes, washing fruits and vegetables, making infant formula. Tap water should not be used for bathing infants or toddlers. It is recommended when there are inadequate levels of chlorine, diseases-causing bacteria (E.Coli), viruses or parasites found in the drinking system. There is a DNCAs, when the water system has a contaminant that cannot be removed by boiling the water, such as lead... The water can be used for bathing older children (not babies or toddlers), adults and elders only.

Despite some efforts made by the government, the past recent years the number of DWAs is every day around 150 and even up to 176 in Manitoba between 2004 and 2014 (9 in 2004 and 176 in 2012). Instead of improving, it has become worse since 2004. If the number of BWA has regularly increased since 2004, the number DNCAs has drastically increased since June 2013, passing from 4 to 17 between 2012 and 2014. Levasseur and Marcoux (2015) indicate the disparity of water advisories between 2004 and 2014, the longest running water advisory being in the Neskantaga First Nation in Ontario, where residents have been boiling their water for almost 22 years as of today (March 25, 2017). Nazko First Nation, Alexis Creek First Nation and Lake Babine, all in British Columbia, are next on the list with drinking water problems spanning 16 years.”

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3 Health Canada (2017).

map shows the rates by province (October 14, 2015): 65% of First Nations have water problems.

Depending on the dates, the number of communities under DWAs changes.
- December 30, 2016: 96 long-term and 31 short-term DWAs (in communities South of 60°)
- November 30, 2016: 130 DWAs in 85 communities
- October 31, 2016: 133 DWAs in 90 communities
- Fall 2015: 139 DWAs in 94 communities

At the end of 2016, a drinking water advisory could have affected up to 72,000 people in First Nations (DWA). As of February 23, 2017, Health Canada gives new numbers: In British Columbia there were 21 DWAs in January 2017 and 20 in February 2017.

2.3. A political obligation: $ 1.8 billion over 5 years to end long-term DWAs
During his campaign, Trudeau promised to give priority to the First Nations problems. Last October 27, 2016, Indigenous and Northern Affairs Canada announced that “Starting in 2016-2017, Budget 2016 is investing an additional $1.8 billion over five years to address health and safety needs, ensure proper facility operation and maintenance, and end long-term drinking water advisories on reserves within five years” (Indigenous and Northern Affairs Canada, 2016, p. 1). Nevertheless, it will be very important to choose the right water systems that will not fail but meet First Nations needs on reserves and provide as well skilled workers for a proper maintenance of the water infrastructures (The Council of Canadians, 2010; First Nations Health Authority, 2017). Hopefully, this could permanently ensure safe drinking water to all the First Nations reserves. Nevertheless, it will take five more years with DWAs at least, because only long-term DWAs are the target (Rioux, 2017).

CONCLUSION: PROTECTING OUR WATER, PROTECTING OUR FUTURE
“Diseases related to contamination of drinking-water constitute a major burden on human health. Interventions to improve the quality of drinking-water provide significant benefits to health” (WHO, 2011). Solving the water problem has been an emergency for years for First Nations, yet still unsolved. Both, federal and provincial government have failed. It is about time to pass a legislation forcing the federal government to provide the same level of security and wellness to everyone, including the First Nations. It is simply a matter of human rights and it is Canada’s obligation toward First Nations. Interestingly, solving the water problem could benefit everyone because it should start with the protection of the environment. Let us remember that the Harper government has ignored and

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5 http://ici.radio-canada.ca/nouvelle/744192/avis-bouillir-eau-potable-premieres-nations-canada

et-environnement/qualite-eau-sante/eau-potable/avis-premieres-nations-sud-60.html#s4 (Last modified: February 23, 2017)

even silenced the scientists who were advocating for safe water and environment, aware of the impact of climate change. Instead, the Harper government removed protections for 99% of lakes and rivers by overhauling the *Navigable Waters Protection Act* and promoted water-intensive industries and other highly polluting industries (Lui, 2015, p. 9).

Solving the water problem and prevent people to drink bottled water would be positive for both individuals and the environment. The Council of Canadians (2017) reminds that with climate change some parts of Canada will face harsh drought conditions; it happened in southern Ontario in summer 2016, in the Guelph region where Nestlé, a giant bottled water corporation, continued pumping, with permits, up to 4.7 million litres of water per day. Nestlé pays just $3.71 per million litres for this water and then ships it out of the local watershed in millions of single-use plastic bottles. A 2010 Statistics Canada study warned that renewable water in southern Canada declined by 8.5 per cent between 1971 and 2004. For this reasons, the Council of Canadians (2016, 2017) encourages to boycott Nestlé and sign a petition. With climate change, Canada’s waters are at risk. Protecting the water becomes therefore urgent for the present and the future generations. Although recommendations fail to protect 99% of lakes and rivers in Canada, last December 2016 at the Parliament (2017, March 23), we must not give up: Every lake and every river must be protected (Council of Canadians, 2017 b).

**REFERENCES**


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