

Water Issues

The tsunami carries lessons for aboriginal drinking water systems

Dr. Hans Peterson



The recent tsunami destroyed water infrastructure and is raising fears of deadly repercussions as sewage and corpses are contaminating water supplies. The fear is that disease-causing microbes (pathogens) will proliferate and humans exposed to these water sources will become ill.

Canada's initial response to the disaster was to send one million chlorine tablets and buckets to the affected area. That is, fill bucket with water, add the chlorine tablet and wait until, hopefully, most of the bugs are dead. This will help overcome the immediate disaster phase, but simply chlorinating tainted water will NOT make it safe to drink.

Unfortunately this same approach is used widely in aboriginal communities in Canada to treat tainted water sources not in an emergency phase, but routinely. We add chlorine to marginally treated water. The chlorine will remove the colour of the water and it will kill some bacteria and viruses, but many survive, and most protozoan parasites survive. This is especially so when there are a lot of particles in the water. The amount of particles can be determined by how "turbid" (form of measurement) the water is. Many native communities with conventional treatment cannot consistently meet such turbidity guidelines and with high turbidity water the effectiveness of chlorine is further reduced as pathogens "hide" among other particles.

I was relieved to see an additional response from the Canadian government a few days after the pill and bucket approach was announced by

sending Canada's Disaster Assistance Response Team (DART) to the affected areas with a primary goal of supplying safe drinking water.

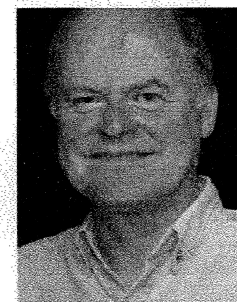
According to DART "it is understood that the biggest problem is the availability of clean water. The DART team brought with them four reverse-osmosis (RO) water purification units. According to the Globe and Mail the RO units "are designed to suck up thousands of litres of water from an external source and filter out all the grime and microbes that wreak havoc with local water supplies. Canadian Forces members say that the RO units can make sewage water as pure and drinkable as tap water. The efficiency of the RO units depend on the condition of the water – the dirtier the water, the longer it takes to clean".

An RO membrane unit will indeed remove all microbes including protozoan parasites, bacteria and viruses and is the most effective way of making any tainted water source safe to drink. This was exactly what transpired at the Yellow Quill First Nation; the First Nation had constructed an RO bottle water plant. The technology is now available to do this rather inexpensively (even if the DART ROs are not). Before the RO plant was installed on the Yellow Quill reserve, residents received outside delivery of drinking water costing around \$14,000 per month. The construction of the bottle water plant was less than \$25,000 with operating costs less than \$4,000 per month. For that \$4,000 Yellow Quill was able to hire several band members to operate the plant and deliver safe drinking water to everyone in the community.

This is how the Yellow Quill Groundwater Pilot project was started. A treatment process was developed based on "friendly bacteria" cleaning up the water before the RO membranes. This is a truly integrated biological and membrane treatment process where few chemicals are used, the water is rapidly treated and within

half an hour the entire process is complete. Gordon and Pasquas' First Nations are now removing their conventional treatment systems and replacing them with the developed integrated biological and membrane treatment system. Compared with the Yellow Quill Bottling Plant, where they used just about every conceivable technology to make drinking water out of poor quality water, the developed Yellow Quill Biological Process accomplishes the same goal with few treatment steps and chemicals. This water is not only safe, it meets Canadian, U.S. and European guidelines and in addition the water is healthy as it filters through a bed of calcium and magnesium.

Maybe the tsunami disaster will do what Walkerton and North Battleford never managed to do, generate a realistic debate on drinking water quality in aboriginal and rural communities across Canada. If Walkerton and North Battleford were wakeup calls, the federal government must pride itself on hitting the snooze button. Will the tsunami disaster, instead of wakeup call, be a wakeup cry? Unfortunately, I can already see Health Canada officials reaching for their rose-colored glasses.



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