Water quality education: what we all need to know

Dr. Ken Patterson

During the recent E. coli outbreak in Kashechewan I was interviewed by a string of reporters in print, radio and TV. After having explained water quality issues to one radio reporter for about 30 minutes, he asked: "What are coliforms?"

Now, if somebody that is reporting on boil water advisories doesn't know what coliforms are then we obviously have a challenge ahead of us to get the population to understand water quality issues. We all need to know how it affects the lives of people in Canada and not only the ones going on holidays to Mexico and other "unsafe water locations".

Knowledge about water quality issues is lacking – even within Health Canada – and this is pointing to far-reaching needs to increase the understanding of poor quality water and human health impacts from it.

To begin with:

Fact #1: Coliforms and E. coli are "indicator bacteria"; their presence is supposed to warn about the presence of other disease-causing bugs.

Fact #2: 80% of all disease in a developing country is caused by water.

Fact #3: Health Canada has no idea (at least won't share it) how much disease caused by water exists in Aboriginal communities.

Fact #4: Health Canada generally determines if the water is safe to drink by the absence of coliforms and E. coli and a boil water advisory is usually called if these organisms are present.

Fact #5: Only one-third of waterborne disease outbreaks test positive for coliforms.

Therefore, even at the best of times, coliform testing will only provide a warning signal one out of three times. Yet, Health Canada, engineering companies, and Indian and Northern Affairs Canada (INAC), have trained, designed and approved water treatment plants sometimes exclusively based on the absence of coliforms.

Fact #6: To get a water to test negative for coliforms all we need is chlorine, we don't need water treatment plants. Coliforms die from low levels of chlorine while many disease-causing bugs don't. That's why other bugs, like Cryptosporidium, need to be removed from the water before it is chlorinated.

Testing, designing and approving water treatment plants therefore require skills other than just pouring chlorine into the water. We need to know how effective the removal of disease-causing bugs and chemicals, such as dissolved organics. What happens after a water treatment plant has been operating for awhile, can its removal rates be maintained?

Some time ago I and a provincial water inspector from Ontario were interviewed at the same time. He knew everything there was to know about coliforms, but when I observed that two-thirds of all waterborne disease outbreaks in the U.S. were caused by viruses and most of them had no presence of coliforms, he was stumped.

As long as we continue to ignore the facts that need to be addressed to get safe drinking water, the percentage of illness that water is causing in Aboriginal communities across Canada will not decrease. Ignoring basic water quality facts also allows engineering firms to continue to design ineffective water treatment processes, and it allows INAC to remain asleep at the wheel.

In September 2004, the Safe Drinking Water Foundation held an educational workshop, Water Keepers (Saddle Lake, Yellow Quill). Participants included: Aboriginal leaders (Tom Goldtooth, Indigenous Environmental Network) and scientists, Drs David Suzuki and David Schindler, and engineers, as well as a legal expert, all discussing water issues.

One of the speakers, Dr. Colin Fricker, a microbiologist from England, who travels the world examining and finding solutions to problems in large water treatment plants. In his presentation he stated that passing the "coliform test" only means that a water treatment plant has met one government requirement, but is not enough to determine whether the water is safe to drink or not.

Defining the problem is only 50 percent of the solution. For those refusing to conduct a thorough examination, they are part of the problem. The coliform test is only a small part of the process and does little to determine if a water treatment process or entire water treatment plant is working properly or not. Fortunately, there are pioneers within INAC who have realized this and have started to support effective solutions to improve water and wastewater issues. ▲

Dr. Patterson is Executive Director of the Safe Drinking Water Foundation. For more information on water quality issues, visit www.safewater.org