

Due diligence equals safe drinking water

By Dr. Hans Peterson

Water plant operator Tony Steinhauer has struggled to maintain good water quality from the poor water quality found on the Saddle Lake reserve.

According to research from the University of Alberta the water at Saddle Lake is safe despite the fact that the parasite *Cryptosporidium* was found in the water system. Health Canada maintained that the water was safe as it left the plant, even with high chlorine levels and no coliforms.

Yet, Steinhauer was convinced that drinking water was to blame for many illnesses on the reserve and he was not persuaded by the assurances given by the authorities that the water was safe to drink.

Steinhauer helped lay out a plan for testing the water and had consultants carry out extensive water tests in April 2004. The initial evaluation was concerned with two aspects of the production of safe drinking water: the first was effective-free chlorination of the water; this is called primary disinfection and should be practiced by all drinking-water treatment plants in Canada. This is especially crucial when conventional treatment is used, as many microbes are not removed and they need to be effectively inactivated (not able to reproduce).

This primary disinfection was compromised at Saddle Lake at the time of testing because the water also contained ammonium ions. Ammonium reacts with the chlorine and forms chloramines, which are up to 100 times weaker as a disinfectant compared with free chlorine. Large quantities of chlorine need to be added before free chlorine levels start to increase when

ammonium is present. Saddle Lake was practicing "secondary disinfection," which should only be used once "primary disinfection" has been carried out.

The second aspect of the work was the maintenance of chlorine residuals in the distribution system. With both ammonium and high levels of dissolved organic material in Saddle Lake's water system, it was predicted that it would be very difficult to maintain chlorine residuals in the distribution system. In the distribution system, a chlorine residual of 0.1 mg/L, or a total chlorine level of 0.5 mg/L, is required or a "Precautionary Drinking Water Advisory" should be issued by Health Canada.

At the north end of Saddle Lake's water distribution system, the free chlorine levels were barely detectable and the total chlorine levels had dropped below 0.20 mg/L. The north end chlorine levels were therefore well below the level where a "Precautionary Drinking Water Advisory" should be issued.

There are other aspects of Saddle Lake's distributed water that are causes for concern, but insufficient disinfection and lack of chlorine residuals should have resulted in Health Canada's officers writing a "Precautionary Boil Water Advisory".

But this did not happen. Chief and Council became increasingly nervous and sought legal advice from several sources, including the Canadian Environmental Law Association. The question of - due diligence - arose. This simply means that if you know that something is wrong and you do nothing about it, you are not exercising due diligence and you can be held liable.

The lawyers were very clear: call a boil water advisory. Health Canada was equally clear: don't call a boil water advisory. Health Canada informed Chief and Council that they did not have the right to call a boil water advisory,

but despite that restriction Chief and Council called a "Precautionary Boil Water Advisory" in May 2004.

Several months later, during a safe drinking water workshop on the Saddle Lake reserve, the self-imposed boil water advisory caught the eye of a reporter, who phoned Health Canada and questioned them about this. Health Canada responded by testing the water again, and then came to the same conclusion that was made several months earlier. The Saddle Lake reserve should be under a "Precautionary Boil Water Advisory".

Is this an isolated incident? Health Canada did extensive testing at Six Nations in 1997 and found that just about every well they tested was contaminated. But they only notified the people whose well was tested and not the community in general. If we see general contamination of wells, is it not prudent to alert the community to this fact? Does every house need to be tested and have E. coli found in the drinking water before Health Canada acts?

When Chief and Council at Six Nations found out about the problems, they hired a consultant to do yet another study. Again, this study found that most wells either had coliforms or E. coli in them. A third study is now underway to try to figure out where the contamination is coming from. It turns out failing septic tanks and ill-protected wells (from vermin, etc.) are the norm rather than the exception. One would think that Health Canada would be able to address basic sanitation issues in Native communities, yet contamination persists.

When it comes to water safety issues, due diligence should be foremost on everyone's mind.

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