



6/10/2015



Drinking Water and Health

Roger Parsonage
Regional Director, Health Protection



Interior Health
Every person matters

Presentation Overview

- What?**
- So What?**
- Now What?**

Image credit: pixfocus.com



6/10/2015

6/10/2015

Key Questions

- Is the water safe?
- Who sets the standards?



6/10/2015

The IH Large Water Program

2011 Interior Health Audit Report: Key Findings

“The regulatory challenge faced by Interior Health’s Drinking Water Program is likely greater than any other comparable region in Canada. Maintaining a regulatory program which assures consistent delivery of safe drinking water in this region is inherently a complex, knowledge-intensive undertaking.”

Strategic Direction:

“We will work towards the lowest reasonably achievable risk through strong, collaborative partnerships with water suppliers. We will be guided by the principles of best practices, continuous quality improvement, transparency and progressive compliance.”

6/10/2015

6/10/2015

Regulatory Framework

Drinking Water Protection Act, Section 6

“...a water supplier must provide...drinking water from the water supply system that is potable water, and meets any additional requirements established by the regulations or by its operation permit.”

Potable water: “...safe to drink and fit for domestic purposes without further treatment.”

6/10/2015

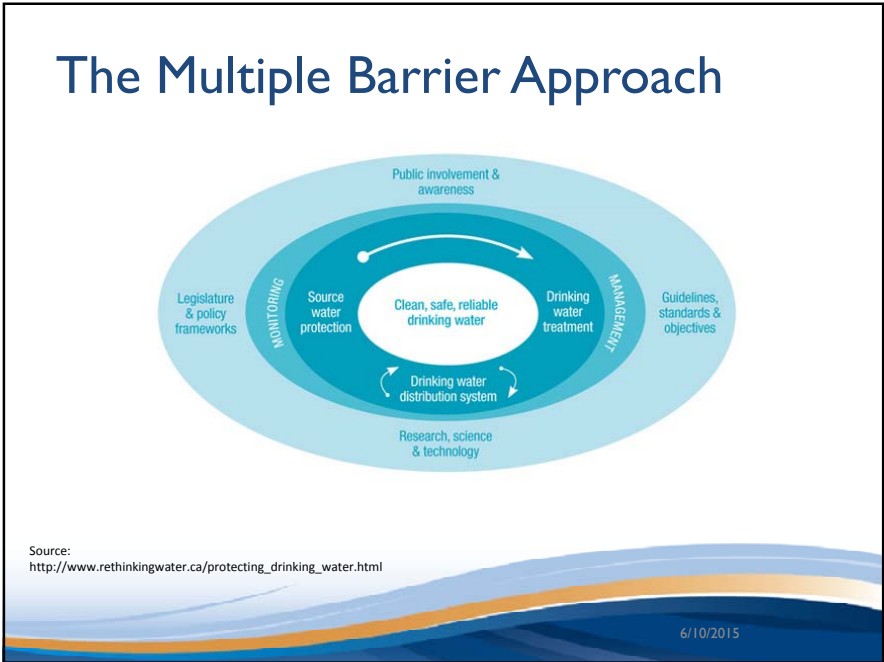
Is the water “safe”?

- Safe is not defined in BC or Canadian legislation
- ‘Unsafe’ is clear (Walkerton); ‘safe’ involves a judgment about the level of risk
- Walkerton Inquiry report aimed for water that posed a “negligible risk” to consumers
- Negligible risk requires the Multiple Barrier Approach

Dr. S. Hruhey. Governance to Assure Safe Drinking Water. Presentation to IHA Board, 2011.

6/10/2015

6/10/2015



Drinking Water Treatment Objectives (Microbiological) for Surface Water Supplies in British Columbia (2012)

“These objectives clarify the minimum expectations for treating surface drinking water sources in B.C.”


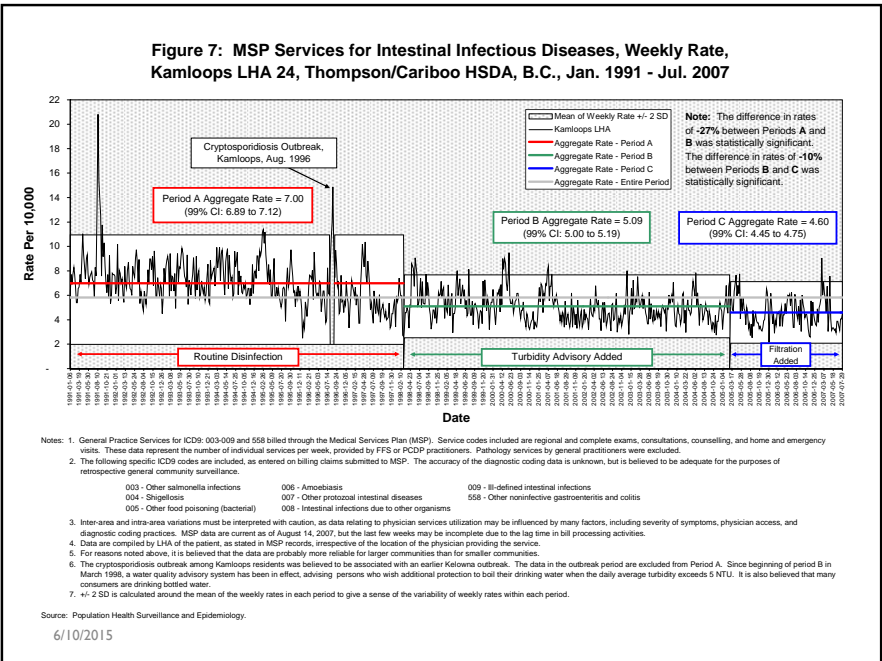
- Ministry of Health

The objectives describe what; it is up to the water supplier to determine how; we jointly determine when.

6/10/2015

So What?

- Inadequately treated surface water is a health risk to our residents
- Protozoa is present in the environment, but tend to occur sporadically and at low concentrations
- Spikes can occur to levels that would cause an outbreak
- There is a level of endemic illness occurring





6/10/2015

Now What?

“Existing water supply systems may have some appreciable risk for certain parameters without treatment in place. In such cases, it is acceptable from a public health perspective for water supply systems to present drinking water officers with a continuous improvement plan that addresses implementing treatment for these parameters within a reasonable time period.” (p.2)

BC Ministry of Health (November 2012). Drinking Water Treatment Objectives (Microbiological) for Surface Water Supplies in British Columbia.



6/10/2015

Public Awareness & Involvement

- How can Interior Health support your efforts to build support for infrastructure investment?



6/10/2015

6/10/2015

Questions?



Kalamalka Lake. Photo Credit: Elise Parsonage

6/10/2015

Drinking Water Treatment Objectives

- Provides general overview of microbiological drinking water treatments standards in B.C.
- Treatment Objectives
 - 4 log reduction or inactivation of viruses
 - 3 log reduction or inactivation of *Giardia* & *Cryptosporidium*
 - 2 treatment processes for surface water supplies
 - ≤ 1 Nephelometric Turbidity Unit (NTU) of turbidity
 - 0 detectable *E.coli*,



6/10/2015

6/10/2015

Objective for Enteric Viruses & Bacteria

- 99.99 % (4- log) reduction or removal of enteric viruses
- Typically achieved through disinfection forms of treatment
- Common methods such as chlorination or U.V. light usually require a minimum raw water quality and chlorine set duration of time to effectively achieve the required inactivation or removal

6/10/2015

Objective for Crypto. & Giardia

- 99.9 % (3- log) reduction or inactivation of harmful protozoa, namely *Cryptosporidium* and *Giardia*
- Best achieved through combination of filtration followed by at least one form of disinfection.
- *Giardia* may be partially inactivated by chlorine alone but this method has been proven to be inefficient against the resistant *Cryptosporidium* species.

6/10/2015

Drinking Water Quality Risk Reduction

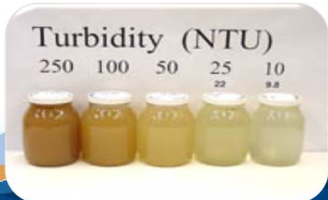


- Following the Multi-Barrier Approach the most effective measure to ensure potability of drinking water is with filtration and at least one form of disinfection treatment

6/10/2015

Objective for Turbidity

- Measure of suspended particulate in water often due to erosion of sediments
- Should be maintained below a value of <1.0 NTU
- Potential indicator of harmful microorganisms and can compromise disinfection treatment



*<http://www.water.ncsu.edu/watersheds/info/turbid.html>

6/10/2015

Zero Fecal Contamination

- 0 - Total coliforms – group of bacteria used to indicate of potential presence of fecal contamination
- 0 - E. coli – bacteria species present only in humans and other warm-blooded animals.*



6/10/2015

Conditions for Exclusion of Filtration

- Minimum two forms of disinfection treatment
- Very low levels E.coli detected in treated water samples
 - <20 cfu/100 ml in at 90 % of weekly samples from the past 6 months
- Average turbidity is around 1.0 NTU but does not exceed 5.0 NTU more that two in a year
- A watershed control program is maintained to minimize the risk of fecal contamination

6/10/2015