

# Turbidity Education and Notification Campaign

# UPDATE

Spring 2006

## Turbidity campaign offers more protection for those at risk

**W**e used to think that turbidity (cloudiness or particles in water) was just an aesthetic concern. Now science has shown that as turbidity rises, the risk of gastrointestinal illness increases as well. While this might not be a concern for most of us, the risk for the very young, the very old, and people with weakened immune systems can be higher. As a result, more is being done to provide information about turbidity so people can make informed choices about their drinking water.

To help our customers — particularly those most at risk from waterborne illness — water suppliers have partnered with Interior Health to create the Turbidity Education & Notification Campaign. The campaign is designed to educate users about turbidity and notify them of elevated turbidity levels. The heart of the campaign is the Turbidity Index, a user-friendly tool that shows whether water is Good, Fair, or Poor.

In keeping with federal standards and provincial regulations, water suppliers regularly test

and monitor drinking water to ensure customer safety. If turbidity exceeds 1 NTU a water supplier will issue a Water Quality Advisory through the local media and, where possible, on websites and at public facilities. Children, the elderly, and people with weakened immune systems will be advised to drink boiled water or a safe alternative. Turbidity greater than 5 NTU may trigger a Boil Water Notice, during which all customers will be advised to drink boiled water or a safe alternative. The Provincial Health Officer recommends

that newborns and people with weakened immune systems drink boiled water at all times if served by an unfiltered surface water source. ■

### About Turbidity

Turbidity (cloudiness or particles in water) interferes with disinfection of drinking water and poses a greater risk of waterborne illness for at-risk populations such as children, the elderly, and people with weakened immune systems.

## “Our duty to report...”

**B**ritish Columbia, with its seemingly endless supply of pristine water, has lagged behind other North American jurisdictions in its requirements for turbidity monitoring and public notification. But in response to numerous waterborne disease outbreaks throughout B.C. in the late 1990s, the tragic

*E-coli* outbreak in Walkerton in 2000, and the resulting public demand for better quality drinking water, the Province of B.C. modernized its *Drinking Water Protection Act* (DWPA) in 2003 to help keep its promise of providing “the most effective drinking water protection in Canada.”

While drinking water quality has improved over the years, new federal standards and provincial regulations for drinking water have expanded the requirement for water

suppliers to monitor turbidity levels and notify customers — especially those at risk — when levels rise. These testing standards are over and above the ongoing testing required for other contaminants such as viruses and bacteria. While water suppliers are responsible for ensuring safe drinking water and public notification, Interior Health’s public health protection staff are responsible for working with water suppliers to ensure that testing and notification are carried out.

These new changes are part of Interior Health’s Drinking Water Improvement Program that was expanded in 2004 — after consulting with water suppliers and examining the amended DWPA, the *Guidelines for Canadian Drinking Water Quality*, and U.S. Environmental Protection Agency standards.

This program includes “4-3-2-1-0 Treatment Objectives” for water suppliers within its region. Technically speaking, the 4-3-2-1-0 approach recommended 4-log (99.99 percent) inactivation and/or removal of viruses, 3-log (99.9 percent) inactivation and/or removal of *Giardia* and *Cryptosporidium*, dual treatment (e.g. filtration and disinfection), less than 1 NTU turbidity, and 0 total or fecal coliforms.

IH has been working with water suppliers across the region to improve water quality and help water suppliers better inform customers about changes in water quality. More recently, an IH ethics review also found that “it is our duty to report and let the public decide what to do about the information given, regardless of any concern of

continues over

**turbidity index**

GOOD FAIR POOR

Due to increased turbidity (cloudiness), Interior Health and (water supplier name) recommend that children, the elderly, people with weakened immune systems, and anyone seeking additional protection drink boiled water or a safe alternative.

Health risks increase as turbidity rises.  
Stay Safe.

Water Supplier Name  
Website Address and Phone Number

# “Our duty to report...”

continued from page 1

message fatigue.” In response, IH has partnered with water suppliers to develop a Turbidity Education & Notification Campaign that will inform customers about

the quality of their drinking water — especially those with health concerns who might be more at risk from increased turbidity. ■

## Safe alternatives to tap water

Safe alternatives to tap water include approved bottled or distilled water, or water filtered through a well-maintained treatment device. If you’re considering an in-home treatment system, we recommend you explore all options carefully before deciding what best suits your needs.

**Point-of-entry systems** treat all water entering your home. They effectively remove colour, sediment, and minerals. Activated-carbon backwashing filters work well, as do reverse osmosis and filtration systems, which also remove or inactivate parasites such as *Giardia* and *Cryptosporidium*.

**Point-of-use systems** treat water intended for drinking or cooking. Usually hooked into the kitchen faucet or installed below the sink, they treat water using reverse osmosis, carbon filtration, or distillation. Point-of-use systems that remove particles one micron or less in diameter are effective against parasites. Filters in this category include those using reverse osmosis, those labeled as ‘absolute’ one-micron filters, and those certified by NSF International under NSF Standard #53 for cyst removal.

Whatever system you choose, follow installation and maintenance directions carefully. Poorly maintained bottled water and treatment units can actually pose serious health risks. ■

## Partners in health protection...

Interior Health (IH) is one of five health regions in B.C. and encompasses the Thompson-Cariboo Shuswap, East Kootenay, Kootenay Boundary, and Okanagan health service areas. IH’s Drinking Water Team in its Health Protection Division works closely with the health region’s 1,600 water suppliers to ensure compliance with the *Drinking Water Protection Act* and corresponding regulations.

As outlined in the act, IH requires each water system serving more than 300 connections to:

- employ certified operators;
- undertake a drinking water sampling program;
- conduct continuous on-line turbidity sampling and recording of raw water for each surface source;
- conduct continuous online monitoring of the disinfection process;
- perform *Giardia* performance monitoring as prescribed by the public health engineer;
- implement a cross-connection control program;
- develop well protection plans for each well source;
- review and update emergency response plan annually;
- provide long-term plans for source, treatment, and distribution system improvements; and

## ‘Particularly’ Interesting...


**Turbidity** is caused by fine suspended particles of clay, silt, organic and inorganic matter, plankton, and other microscopic organisms that are picked up by water as it passes through a watershed. While turbidity usually results from natural events such as spring runoff, it can also be caused by manmade erosion.

**Turbidity** — reported in nephelometric turbidity units (NTU) — is an optical measurement of water’s ability to scatter and absorb light rather than transmit it in straight lines.

**Turbidity** levels are typically much higher in water from surface sources than in groundwater. Turbidity levels can range from less than 1 NTU to more than 1,000 NTU. At 5 NTU water is visibly cloudy, and at 25 NTU it is murky.

**Turbidity** was once considered only an aesthetic concern. But science has proven that as turbidity increases, the risk to human health also increases, particularly for at-risk populations such as newborns, the elderly, and the immunocompromised. Turbidity is an important good water quality indicator because bacteria, viruses, and parasites such as *Giardia* and *Cryptosporidium* can attach themselves to the suspended particles in turbid water. These particles interfere with disinfection by shielding contaminants from the disinfectant (e.g. chlorine). Nor is chlorine effective in deactivating *Cryptosporidium*.

To support its statement that the “control of turbidity in drinking water supplies is important for both health and aesthetic reasons,” the federal *Guidelines for Canadian Drinking Water Quality* state that “the maximum acceptable concentration of turbidity in water entering a distribution system is 1 NTU.” The guidelines were recently updated to recommend filtration for all surface water sources. ■

Published by:  
 Interior Health  
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