

Turbidity Education and Notification Campaign

FAQS

In the spring of 2006, Interior Health (IH) and unfiltered surface water systems serving more than 300 connections introduced the Turbidity Education & Notification Campaign to:

- inform customers that health risks increase as turbidity rises (particularly for at-risk populations such as children, the elderly, and people with weakened immune systems); and to
- notify customers of turbidity levels higher than 1 NTU as recommended in the federal *Guidelines for Canadian Drinking Water Quality*.

The following are answers to questions you might have about turbidity or the Turbidity Education & Notification Campaign.

What is turbidity?

Turbidity is a water quality term that refers to the relative clarity of water. Turbidity occurs when fine suspended particles of clay, silt, organic and inorganic matter, plankton, and other microscopic organisms are picked up by water as it passes through a watershed. Turbidity levels are typically much higher in water from surface water sources such as streams, rivers, and lakes than from groundwater sources. Some surface water sources exhibit high turbidity levels during periods of high rainfall or snow melt (e.g. spring runoff). Measured in nephelometric turbidity units (NTU), turbidity ranges from less than 1 NTU to more than 1,000 NTU. At 5 NTU water is visibly cloudy; at 25 NTU it is murky.

What is the Turbidity Index?

The Turbidity Index is a messaging tool designed to notify water customers of current turbidity levels and, therefore, the relative risk of drinking the water. The index shows whether water is Good (<1 NTU), Fair (1-5 NTU), or Poor (>5 NTU), and provides specific recommendations for each rating. The index will appear on participating water suppliers' websites and through the media during a Water Quality Advisory or a Boil Water Notice.

What is a Water Quality Advisory (WQA)?

Your water supplier will issue a WQA if turbidity levels exceed 1 NTU. Children, the elderly, people with weakened immune systems, and anyone seeking additional protection will be advised to drink boiled water or a safe alternative. Ongoing information will be available on participating water suppliers' websites and through the media.

What is a Boil Water Notice (BWN)?

Your water supplier will issue a BWN if turbidity levels exceed 5 NTU. All users will be advised to drink boiled water or a safe alternative. Ongoing information will be available on participating water suppliers' websites and through the media.

Is turbidity a health concern?

Turbidity is not so much a health concern as an indicator of health risk. Science has proven that as turbidity increases, the risk for gastrointestinal illness also increases—particularly for at-risk populations such as newborns, the elderly, and people with weakened immune systems (e.g. those with HIV/Aids, undergoing chemotherapy, or taking anti-rejection drugs following an organ transplant).

Why is turbidity an important water quality indicator?

Bacteria, viruses, and parasites such as *Giardia* and *Cryptosporidium* can attach themselves to the suspended particles in turbid water. These particles then interfere with disinfection by shielding contaminants from the disinfectant (e.g. chlorine).

Is our water safe to drink?

This question cannot be answered with a simple yes or no. The "safety" of the water fluctuates, and the question at any one time is how safe and for whom. Surface water can contain parasites such as *Giardia* and *Cryptosporidium*, which can cause gastrointestinal illness. The Turbidity Index informs people of the current level of turbidity and who should consider drinking boiled water or a safe alternative.

What precautions should I take with turbid water?

The Province of B.C. recommends that newborns and people with weakened immune systems drink boiled water or a safe alternative at all times if they are served by an unfiltered surface water source. When turbidity levels range from 1-5 NTU, IH and water suppliers recommend that children, the elderly, people with compromised immune systems, and anyone seeking additional protection drink boiled water or a safe alternative. When turbidity levels exceed 5 NTU, IH and water suppliers recommend that all users drink boiled water or a safe alternative.

How can I protect my children?

IH and water suppliers recommend that newborns (up to six months) drink boiled water or a safe alternative at all times. They also suggest that children drink boiled water or a safe alternative if turbidity levels exceed 1 NTU. You can provide them with water that has been boiled for one minute, bottled or distilled water, or water that has been filtered through a well-maintained treatment device.

How do I boil water intended for drinking?

Water intended for drinking, washing fruits and vegetables, making juice or ice, or brushing teeth should be boiled for one minute. Water should then be refrigerated in a clean, covered container.

What are safe alternatives to tap water?

Safe alternatives to tap water include bottled or distilled water, or water filtered through a well-maintained in-home treatment device.

Point-of-entry systems treat all water entering your home. They may 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 filtration units can actually pose serious health risks.

IH can provide you with information about bottled water and other alternatives.

Can I get my point-of-use water treatment device tested?

Yes. Testing is available at private analytical laboratories. Bacteriological testing is about \$40; chemical testing is about \$200.

Is bottled water safe?

In Canada, bottled water products are considered food items and, as such, are monitored by the Canadian Food Inspection Agency. Members of the Canadian Bottled Water Association are also subject to the standards of the association. Bottled water plants in B.C.'s interior are inspected by IH public health staff.

Are grocery store water systems tested?

Yes. Water fill stations are monitored by IH and generally treat water to a high standard. Ask your store about its monitoring program and quality assurance.

How long can I keep bottled water?

Water can support microbial growth, and like any other product has a shelf life. Shelf life depends on the type of water bottled and the treatment methods used. You can consult with bottled water companies about the shelf lives of their products.

Should bottled water be refrigerated?

As water can support microbial growth, bottled water should be refrigerated once it's opened.

Will my coffee maker purify the water?

No. The coffee filter may remove some turbidity and the heat may kill some bacterial, but neither *Giardia* nor *Cryptosporidium* will be removed or inactivated.

Is it safe to brush my teeth with turbid water?

The Province of B.C. recommends that people with compromised immune systems avoid turbid water at all times if they're serviced by an unfiltered surface water source. When turbidity levels range from 1-5 NTU, IH and water suppliers recommend that children, the elderly, people with compromised immune systems, and anyone seeking additional protection use boiled water or a safe alternative. When turbidity levels exceed 5 NTU, IH and water suppliers recommend that all customers use boiled water or a safe alternative.

Is it safe to wash my vegetables in turbid water?

The Province of B.C. recommends that newborns and people with compromised immune systems avoid turbid water at all times if they're serviced by an unfiltered surface water source. When turbidity levels range from 1-5 NTU, IH and water suppliers recommend that children, the elderly, people with compromised immune systems, and anyone seeking additional protection use boiled water or a safe alternative. When turbidity levels exceed 5 NTU, IH and water suppliers recommend that all customers use boiled water or a safe alternative.

Is it safe to bathe or shower with turbid water?

Yes, but children should be discouraged from drinking bath water or chewing facecloths.

I am pregnant. Should I drink turbid water?

IH and water suppliers recommend that pregnant women drink boiled water or a safe alternative when turbidity levels exceed 1 NTU.

My mom is 86. Should she drink turbid water?

IH and water suppliers recommend that elderly people drink boiled water or a safe alternative when turbidity levels exceed 1 NTU.

I have cancer. Should I drink turbid water?

No. If you are currently receiving chemotherapy, be aware that some treatments decrease immune system function. You should drink boiled water or a safe alternative at all times.

What should I tell my visitors?

Visitors should know if your water comes from an unfiltered water source. They may then choose to take precautions such as drinking boiled, bottled, or distilled water, or water that has been filtered through a well-maintained treatment device.

What if I'm sick and suspect turbidity as the cause?

It is difficult to attribute individual cases of gastrointestinal illness directly to increased levels of turbidity, and there are many potential sources of illness other than drinking water. As recommended in *The BC Health Guide*, you should contact a health professional or the BC Nurseline at 1-866-215-4700 if you develop signs of dehydration, severe diarrhea, or if diarrhea lasts longer than two weeks.

How often is my water tested, and for what?

Water intended for drinking is measured against physical, chemical, radiological, and microbiological standards outlined in the federal *Guidelines for Canadian Drinking Water Quality*. To that end, your water is tested regularly for bacteria (e.g. *fecal coliforms*). The guidelines recommend that water intended for drinking have a turbidity level less than 1 NTU.

How will elevated levels of turbidity be reported?

In keeping with the *Guidelines for Canadian Drinking Water Quality* and B.C.'s *Drinking Water Protection Act*, water suppliers will notify customers of turbidity levels that exceed 1 NTU. For example, a Turbidity Index on the supplier's website could indicate if the water is 'Good' (<1 NTU), 'Fair' (1-5 NTU), or 'Poor' (>5 NTU), and provide recommendations for each rating. 'Fair' and 'Poor' ratings will be publicized through the media. Your water supplier might also provide an automatic email notification service.

What are accepted water-industry standards for turbidity, and who sets them?

Health Canada's *Guidelines for Canadian Drinking Water Quality* recommend that surface water suppliers aim for turbidity levels <1 NTU at the point of disinfection. The guidelines also recommend filtration for water from all surface water sources, and specific water quality parameters for each type of filtration used. These standards are reflected in B.C.'s *Drinking Water Protection Act*, and advocated by IH in its 4-3-2-1-0 treatment objectives.

What are Interior Health's 4-3-2-1-0 treatment objectives?

In 2004—after carefully examining B.C.'s *Drinking Water Protection Act*, the *Guidelines for Canadian Drinking Water Quality*, and standards set by the U.S. Environmental Protection Agency—IH defined new water treatment goals for water suppliers within its region. The 4-3-2-1-0 treatment objectives recommended 4-log (99.99 percent) inactivation and/or removal of viruses, 3-log (99.9 percent) inactivation and/or removal of *Giardia* and *Cryptosporidia*, dual treatment (e.g. filtration and disinfection), <1 NTU turbidity, and 0 total and fecal coliforms.

Who is responsible for ensuring my drinking water is safe?

In keeping with B.C.'s *Drinking Water Protection Act*, Interior Health is responsible for overseeing source-to-tap assessments of all drinking water systems, and monitoring operational standards, including turbidity testing, monitoring, reporting, and public notification.

IH's Drinking Water Team (in its Health Protection Division) works closely with the region's 1,600 water

suppliers to ensure compliance with the 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
- report prescribed monitoring results to the public health engineer monthly.

And, as also required by the act, IH staff are working with water suppliers via the Turbidity Education & Notification Campaign to ensure customers are aware of potential health risks posed by increased turbidity, and are informed of turbidity spikes that may compromise their health.

How do Interior Health and my water supplier respond to elevated turbidity levels?

Surface water suppliers serving more than 300 connections are required by IH to monitor and report turbidity levels on an ongoing basis. If turbidity levels rise above the federally recommended level of 1 NTU, a water supplier must notify IH, monitor bacteriological levels and chlorine residuals within the distribution system, and notify customers of increased health risks using the Turbidity Index. If turbidity levels exceed 5 NTU, and if IH deems it necessary, the water supplier will initiate an Emergency Response Plan. The public will be notified of the resulting Boil Water Notice via the water supplier's website and through the media.

Why can't we just get rid of turbidity?

The majority of water suppliers in B.C.'s interior draw water from surface sources, and most surface sources exhibit some level of seasonal turbidity. Removing turbidity requires filtration, which is very costly, particularly for suppliers that service agricultural users.

How will turbidity affect the local economy?

Some businesses or industries could be affected by turbid water, and should take actions to prevent or minimize potential impacts. Hotels and restaurants, for example, might consider installing treatment devices or providing their customers with bottled water.