

Wildfire: Its Effects on Drinking Water Quality

Wildfires can impact water sources used for our drinking water. For example: nearby streams, rivers and lakes. When the trees, soil and vegetation surrounding these areas are affected by a wildfire, it can be difficult for that water ecosystem to maintain good water quality.

How can wildfires affect drinking water quality?

Possible effects of wildfires on drinking water include:

- Changes in the amount and timing of snowmelt and runoff from storms
- Changes in water quality from build-up of ash, soil erosion, and fire debris
- Changes in taste, colour and smell of drinking water; and
- If fire retardant is present, there may be a possible rise in soil and water chemical levels, such as: phosphate, nitrate, and nitrite

These changes can make it harder for the local water treatment system to work in making your drinking water safe. The level of impact depends on the power and size of the fire, the weather, type of landscape/geography, and the ecosystem where the water comes from.

How do I know if my water quality has been affected?

If you are on a community water system, your water supplier should evaluate how your system has been affected, and if there are impacts on the quality of your drinking water. If there are concerns, these should be communicated with you.

If your drinking water comes from your own private well or surface water source (e.g. lake), some signs your water supply may have been impacted by wildfires include:

- Fires at or upstream of your water intake
- Changes in water appearance, clarity, colour, smell and/or taste; or

- Electricity/power outages or fire damage to structures (e.g. building, water intake valve, water well head, treatment system, piping, etc.)

These may interrupt normal treatment practices, or cause loss in water pressure. This could allow pollution to enter the system, or lead to stagnant water lines that may need to be flushed.

Can fire retardant affect my drinking water?

The use of fire retardants to fight wildfires is common in B.C. When good practices are followed, there is little risk to human health and the environment. The most commonly used fire retardant in B.C. is made of nearly 90% water. A nitrogen based product, similar to fertilizer, is added along with small amounts of additives to make it fight fires better. It is also added to give it a red colour so that fire fighters can see where it has been dropped.

If fire retardant gets into surface water that is used for drinking water, it may cause temporary increases in nitrate/nitrite levels and/or water cloudiness. For more information, see [HealthLinkBC File #05a Nitrate in Well Water](#).

Where fire retardant has entered into drinking water sources, it is likely the amounts will be so small that it is not a human health concern, and levels will drop quickly over time. To make sure water is safe, drinking water from sources where fire retardant chemicals were used should be checked to ensure that it meets the Guidelines for Canadian Drinking Water Quality. Water should meet the following guideline levels:

- Nitrate - 45 mg/L as nitrate or 10 mg/L as nitrate-nitrogen
- Nitrite - 3 mg/L nitrite or 1 mg/L as nitrite-nitrogen
- (Cloudy or unclear) Turbidity <1.0 NTU after treatment

People and pets should avoid direct contact with fire retardants. If inhaled or ingested, immediate first aid

is not likely required, however, you should contact a physician or B.C. Drug and Poison Control Center for advice at www.dpic.org/ or call 1 800 567-8911

If there is skin contact with fire retardants, wash the area with soap and water, and launder any clothing prior to wearing.

What are the long term impacts to my water quality?

It's hard to predict the long term impacts of wildfires on drinking water quality. For some communities, problems may appear long after the wildfire is over (i.e. during intense rainfall events in the fall/winter months). Burned land and forests near water can cause large amounts of hanging or dissolved material (e.g. ash) to wash into downstream drinking water supplies. The following problems may impact a drinking water system long after the wildfire is over:

- More debris in water reservoirs, causing damage and higher maintenance costs
- More algal blooms in reservoirs, causing health effects, taste and odor
- Increased turbidity (water cloudiness). This may lead to larger amounts of sludge stuck in water filters or more chemicals needed for water treatment, all of which would raise operating costs
- Changes in water chemistry, such as increased dissolved organic carbon concentrations, or increased iron and manganese concentrations. These may form unwanted disinfection by-products (e.g. colour, cloudiness, trihalomethanes) and/or lead to the need for further treatment

What can I do if my drinking water has been affected by a wildfire?

- Do your best to conserve water as the water supply may be very limited due to power outages or other impacts for an unknown amount of time
- Questions about the quality of your drinking water should be directed to your local water supplier (e.g. municipality, utility provider, well owner, etc.). Do not drink tap water unless local officials have assured that it's safe for drinking

- Where water disinfection processes have been interrupted, you may need to use a different source of drinking water or disinfect tap water. Boiling or use disinfection tablets until the water source can be assessed and health officials have assured you that it's safe for drinking. For more information, see [HealthLinkBC File #49b Disinfecting Drinking Water](#)
- Water lines may need repairing and flushing to remove contaminated water
- Wells or surface water (e.g. lakes, rivers, streams, etc.) affected by fire retardants should be tested to ensure water meets the water quality standards in Guidelines for Canadian Drinking Water Quality at: www.canada.ca/en/health-canada/services/environmental-workplace-health/water-quality/drinking-water/canadian-drinking-water-guidelines.html
- For information on testing your private water source, refer to the list of Provincial Health Officer Approved Drinking Water Testing Laboratories at <http://lmlabs.phsa.ca/Documents/8%203%201%20PHO%20Approved%20Laboratory%20List%2020171231.pdf> (PDF 26 KB) or check your telephone directory's yellow pages under Laboratories-Analytical. For more information, see [HealthLinkBC File #05b Well Water Testing](#)

For More Information

- To report a wildfire or for the latest information on the current wildfire situation in B.C., see Public Safety & Emergency Services – Wildfire Status at www2.gov.bc.ca/gov/content/safety/wildfire-status
- For information about protecting your community from wildfire, see FireSmart's manual at <https://firesmartcanada.ca/wp-content/uploads/2018/10/FireSmart-Protecting-Your-Community.pdf>
- For information about how to prepare in advance for a potential evacuation alert or order, see PreparedBC - Wildfires www2.gov.bc.ca/gov/content/safety/emergency-preparedness-response-recovery/preparedbc/your-hazards/wildfires